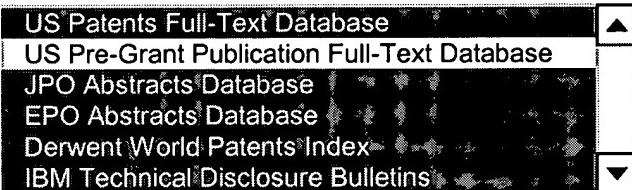


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Term	Documents
TRICLOSAN.DWPI,TDBD,EPAB,JPAB,USPT.	1644
(4 AND TRICLOSAN).USPT,JPAB,EPAB,DWPI,TDBD.	3
(L4 AND TRICLOSAN).USPT,JPAB,EPAB,DWPI,TDBD.	3

**Database:**

Search: L11

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Search History**DATE: Monday, August 19, 2002** [Printable Copy](#) [Create Case](#)

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<u>L11</u>	14 and triclosan	3	<u>L11</u>
<u>L10</u>	19 and triclosan	22	<u>L10</u>
<u>L9</u>	18 and 11	50	<u>L9</u>
<u>L8</u>	(cetylpyridinium or cetyl pyridinium)	4319	<u>L8</u>
<u>L7</u>	16 and triclosan	2	<u>L7</u>
<u>L6</u>	14 and active.clm.	18	<u>L6</u>
<u>L5</u>	12 and 14	3	<u>L5</u>
<u>L4</u>	11 and coating.clm.	138	<u>L4</u>
<u>L3</u>	12 and triclosan.clm.	9	<u>L3</u>
<u>L2</u>	11 and triclosan	33	<u>L2</u>
<u>L1</u>	chewing gum.clm.	1007	<u>L1</u>

END OF SEARCH HISTORY

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L11: Entry 1 of 3

File: USPT

DOCUMENT-IDENTIFIER: US 5888491 A

TITLE: Optionally crosslinkable coatings, compositions and methods of use

Detailed Description Text (100):

Compositions for delivery of the polymer or surfactant may additionally contain other adjuvants, such as flavorants (both natural and synthetic, such as peppermint oil, menthol and sweeteners), coloring agents, viscosity modifiers, preservatives, antioxidants and antimicrobial agents (such as hydroquinone, BHT, ascorbic acid, p-hydroxybenzoic acid, alkyl esters, sodium sorbate and thymol), other anti-plaque additives (such as organophosphonates, triclosan and others such as those disclosed in U.S. Pat. No. 3,488,419), oral therapeutic agents (such as fluoride salts, chlorhexidine and allantoin), pigments and dyes and buffers to control ionic strength.

CLAIMS:

1. A dental composition suitable for coating human oral surfaces, said composition comprising a polymer comprising repeating units
2. A chewing gum comprising a polymer comprising repeating units
3. A method for coating oral surfaces of the mouth of a human comprising
4. A dental composition suitable for coating oral surfaces in the human mouth, said composition comprising
6. A dental composition suitable for coating oral surfaces in the human mouth, said composition comprising
7. A dental composition suitable for coating human oral surfaces, said composition comprising a polymer comprising repeating units
10. A dental composition suitable for coating human oral surfaces, said composition comprising a polymer comprising repeating units
28. A coating on hard tissue surfaces or surfaces of the oral environment, which coating is made from a polymer comprising repeating units
29. A temporary or permanent dental restorative, said restorative having a coating comprising a polymer comprising repeating units
30. An orthodontic device having a coating comprising a polymer comprising repeating units

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L11: Entry 1 of 3

File: USPT

Mar 30, 1999

US-PAT-NO: 5888491

DOCUMENT-IDENTIFIER: US 5888491 A

TITLE: Optionally crosslinkable coatings, compositions and methods of use

DATE-ISSUED: March 30, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mitra; Sumita B.	West St. Paul	MN		
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NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Minnesota Mining and Manufacturing Company	St. Paul	MN			02

APPL-NO: 08/ 347861 [PALM]

DATE FILED: December 1, 1994

PARENT-CASE:

CROSS-REFERENCE TO RELATED APPLICATION This application is a continuation-in-part, application of U.S. application Ser. No. 08/163,028 filed Dec. 6, 1993, now pending.

INT-CL: [06] A61 K 31/74

US-CL-ISSUED: 424/78.31; 424/49, 523/109

US-CL-CURRENT: 424/78.31; 424/49, 523/109

FIELD-OF-SEARCH: 424/78.31, 424/49, 523/109

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>4161518</u>	July 1979	Wen et al.	
<input type="checkbox"/> <u>4400159</u>	August 1983	Orlowski	433/202
<input type="checkbox"/> <u>4663202</u>	May 1987	Causton	
<input type="checkbox"/> <u>4693935</u>	September 1987	Mazurek	
<input type="checkbox"/> <u>4728571</u>	March 1988	Clemens et al.	
<input type="checkbox"/> <u>4872936</u>	October 1989	Engelbrecht	
<input type="checkbox"/> <u>4950479</u>	August 1990	Hill	424/439
<input type="checkbox"/> <u>4972037</u>	November 1990	Garbe et al.	
<input type="checkbox"/> <u>4981902</u>	January 1991	Mitra et al.	
<input type="checkbox"/> <u>4981903</u>	January 1991	Garbe et al.	
<input type="checkbox"/> <u>4985155</u>	January 1991	Yamada et al.	
<input type="checkbox"/> <u>5021477</u>	June 1991	Garbe et al.	
<input type="checkbox"/> <u>5032387</u>	July 1991	Hill et al.	424/49
<input type="checkbox"/> <u>5032455</u>	July 1991	Dana et al.	
<input type="checkbox"/> <u>5078988</u>	January 1992	Lin et al.	
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<input type="checkbox"/> <u>5154762</u>	October 1992	Mitra et al.	
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<input type="checkbox"/> <u>5244696</u>	September 1993	Hazan et al.	
<input type="checkbox"/> <u>5322890</u>	June 1994	Ando et al.	
<input type="checkbox"/> <u>5364693</u>	November 1994	Moren	428/263

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FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0 352 339	January 1990	EP	
0412770	February 1991	EP	
0412771	February 1991	EP	
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1104786	October 1965	GB	
91/13608	March 1991	WO	
9323009	November 1993	WO	

OTHER PUBLICATIONS

A. Gaffar, J. Afflitto, N. Nuran, "Toothbrush Chemistry" Am. Chem. Soc. (Jul. 1993).

ART-UNIT: 165

PRIMARY-EXAMINER: Page; Thurman K.

ASSISTANT-EXAMINER: Faulkner; D.

ABSTRACT:

Coatings for hard tissue and surfaces of the oral environment are provided that reduce adhesion of bacteria and proteinaceous substances to these surfaces. Methods of reducing adhesion of these materials to such surfaces, and polymers for incorporation into such coatings are also provided.

40 Claims, 3 Drawing figures

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L14: Entry 1 of 2

File: USPT

DOCUMENT-IDENTIFIER: US 5711961 A

TITLE: Pharmaceutical compositions based on chewing gum and a method for the preparation thereof

Detailed Description Paragraph Table (1):

1. VITAMIN C - 1.5 g of gum containing 250 mg of Vitamin C. Gum base 0.800 g Sorbitol 0.400 g Vitamin C, 98% coated 0.250 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 2. TRICLOSAN 1.4 g of gum containing 0.010 mg of Triclosan Gum base 0.850 Sorbitol 0.410 g Triclosan 0.00001 g Aspartame 0.09999 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 3. CETYL PYRIDINIUM - 1.5 g of gum containing 1 mg of cetyl pyridinium Gum base 0.950 g Sorbitol 0.500 g Cetyl pyridinium 0.001 g Aspartame 0.010 g Flavourings 0.014 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 4. DIMENHYDRINATE - 1.5 g of gum containing 25 mg of dimenhydrinate Gum base 0.950 g Sorbitol 0.475 g Dimenhydrinate, 50% microspheres 0.036 g Dimenhydrinate, normal 0.007 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 5. CAMOMILE - 1.5 g of gum containing 250 mg of extract of camomile. Gum base 0.800 g Sorbitol 0.415 g Camomile extract 0.250 g Aspartame 0.010 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 6. ASPIRIN - 1.5 g of gum containing 300 mg of aspirin Gum base 0.750 g Sorbitol 0.400 g Aspirin 0.300 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 7. B-CAROTENE + VITAMIN E - 1.5 g of gum containing 25 mg of vitamin E and 50 mg of B-carotene Gum base 0.850 g Sorbitol 0.500 g Vitamin E, 50% coated 0.050 g .beta.-carotene 0.050 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g

CLAIMS:

1. Chewing gum tablet comprising:a mixture of a chewing gum base and sugary microgranules;a lacquer coating on the tablet selected from the group consisting of pharmaceutically acceptable celluloses and polyethylene glycols.2. Chewing gum tablet according to claim 1, wherein said additive agent is a flavoring agent.3. Chewing gum tablet according to claim 1, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.4. Chewing gum tablet according to claim 1, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.5. Chewing gum tablet according to claim 1, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and polyethylene glycol 400.6. Chewing gum tablet according to claim 1, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.7. Chewing gum tablet according to claim 2, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood

levels.

- a) freezing chewing gum in pellet form to a temperature of between -20.degree. C. and -25.degree. C. to form frozen gum;
- b) grinding said frozen gum to a particle size of between 60 and 190 mesh to form ground chewing gum;
- c) adding to said ground chewing gum sugary microgranules having adsorbed onto a surface thereof a component selected from the group consisting of an additive agent and an active ingredient to form a granular mixture;
- e) coating said tablets with a lacquer comprising a pharmaceutically acceptable celluloses or a polyethylene glycol in a solvent.

9. A method according to claim 8, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.

11. A method according to claim 10, wherein said active ingredient is added to the mixture of ground chewing gum, sweetener, lubricant and flavoring agent in the form of microencapsulated or otherwise delayed release coated particles.

17. A method according to claim 8, wherein the mixture of said frozen chewing gum pellets and said sugary microgranules is granulated in moistened condition and dried on a fluid bed and then tablets are prepared by compression therefrom.

24. A chewing gum composition comprising:

a mixture of a chewing gum base and sugary microgranules;

a lacquer coating on said microgranules selected from the group consisting of pharmaceutically acceptable celluloses and polyethylene glycols.

25. Chewing gum composition according to claim 24, wherein said additive agent is a flavoring agent.

26. Chewing gum composition according to claim 24, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.

27. Chewing gum composition according to claim 24, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.

28. Chewing gum composition according to claim 24, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and polyethylene glycol 400.

29. Chewing gum composition according to claim 24, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.

30. Chewing gum tablet according to claim 26, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood levels.

31. A method of preparing a chewing gum composition, comprising the steps of:

- b) coating said sugary microgranules with a lacquer comprising a pharmaceutically acceptable celluloses or a polyethylene glycol in a solvent to form coated microgranules;
- c) mixing said coated microgranules with frozen ground chewing gum to form a chewing gum composition.

32. A method according to claim 31, wherein said chewing gum is frozen in pellet form to a temperature of between -20.degree. C. and -25.degree. C. and ground to a particle size of between 60 and 190 mesh.

33. A method according to claim 31, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.

43. A method according to claim 31 and further including the step of compressing the chewing gum composition to form a

tablet.

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L14: Entry 2 of 2

File: USPT

DOCUMENT-IDENTIFIER: US 5380530 A

TITLE: Oral care composition coated gum

Brief Summary Text (76):

A third embodiment of the invention comprises therapeutic chewing gums characterized by an emulsion coating as described earlier, wherein the emulsion coating contains a therapeutic substance such as stannous fluoride and the emulsion coating-therapeutic substance mixture is released into the oral cavity from the gum, during chewing, at a predetermined rate and in a predetermined amount. Other therapeutic substances include: oral care medicaments such as chlorhexidine, triclosan, potassium nitrate, various quaternaries, the active essential oils in Listerine.RTM., and the like, various antibiotics, analgesics, oral discomfort relief active ingredients, and the like.

Brief Summary Text (132):triclosan,Brief Summary Text (135):as cetylpyridinium chloride,Brief Summary Paragraph Table (2):

TABLE II	THERAPEUTIC
CHEWING GUMS Type of Therapeutic Substance Added to Emulsion Coating (% by weight)	Coating Mixture Abrasive for
From Table I cleaning and EXAMPLE (qs to 100%)	From Table I cleaning and EXAMPLE (qs to 100%) tartar control Antimicrobial Antibiotic Dry Mouth Oral Discomfort
10. #1 silica dentifrice grade	10. #1 silica dentifrice grade
(10-30) 11 #3 stannous fluoride (1.2-4.0) 12 #4 Mineral salts (saliva equiv.) sodium fluoride (2 ppm - final) 13 #5 tetracycline (0.5-2.5) 14 #6 benzocaine (4.0-10.0) 15 #5 potassium nitrate (5.0) 16 #3 pectin (5.0-15.0) 17 #8 <u>triclosan</u> (0.2-1.0) 18 #9 Kaolin (10-30)	(10-30) 11 #3 stannous fluoride (1.2-4.0) 12 #4 Mineral salts (saliva equiv.) sodium fluoride (2 ppm - final) 13 #5 tetracycline (0.5-2.5) 14 #6 benzocaine (4.0-10.0) 15 #5 potassium nitrate (5.0) 16 #3 pectin (5.0-15.0) 17 #8 <u>triclosan</u> (0.2-1.0) 18 #9 Kaolin (10-30)

CLAIMS:

1. A therapeutic preparation effective in treating localized conditions of the mouth, teeth and gums, said conditions being selected from the group consisting of plaque, gingivitis, hypersensitivity, stomatitis and microbes in the mouth, said preparation being in the form of a chewing gum wherein:

A. the chewing gum is coated with an emulsion comprising an ingestible surfactant-emulsifier and a polydimethyl siloxane insoluble in said surfactant-emulsifier,

B. the emulsion is applied to the chewing gum by means of a coating process selected from the group of coating processes consisting of printing, film coating, adhesive applications and textile dyeing, and

C. the emulsion coating on said gum is releasable during chewing, at a therapeutic effective rate and in a therapeutic effective amount.

2. The therapeutic preparation according to claim 1, wherein the emulsion coating comprises a therapeutic substance selected from the group consisting of antimicrobials, microbially active stannous fluoride, chlorhexidine, triclosan, zinc chloride, cationic antimicrobial agents, cetylpyridinium chloride, antioxidants, propyl gallate, enzymes, antibiotics, tetracycline, mineral salts, pectin, strontium chloride, potassium nitrate, metronidazole benzocaine, analgesics for mouth and throat discomfort, sanguinarine extract, stearoyl-2-lactate, cough and cold remedies, and remineralizing substances.

3. The therapeutic preparation according to claim 1, wherein said coating releases during chewing at an effective plaque

disrupting rate and in an effective plaque disrupting amount.

4. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride, releasable at an effective antigingivitis rate and in an effective antigingivitis amount.

5. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective hypersensitivity treatment rate and in an effective hypersensitivity treatment level.

6. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective stomatitis treatment rate and at an effective stomatitis treatment level.

7. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises chlorhexidine releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

8. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises triclosan releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

9. The coated chewing gum according to claim 1, wherein the ingestible surfactant is selected from the group consisting of:

10. The coated chewing gum according to claim 1, wherein the polydimethyl siloxane has the general structure: ##STR2## wherein n represents a whole number from between about 100 and 5,000, and the polydimethyl siloxane has a viscosity from between about 350 and about 12,500 centistokes.

11. A coated chewing gum according to claim 1, wherein the coating is applied to the chewing gum at from between about 0.5% and about 6% by weight of the gum, or from between about 10 mg/piece and about 100 mg/piece.

12. A coated chewing gum according to claim 9, wherein the ingestible surfactant is a polyoxyethylene-polyoxybutylene block copolymer.

13. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a printing process.

14. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a film coating process.

15. A chewing gum according to claim 3, wherein the plaque disrupting, melt-emulsion coating is applied to the chewing gum at an elevated temperature by means of an adhesive application process.

16. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a textile dyeing process.

17. A method of manufacturing a therapeutic chewing gum comprising, preparing a sheet of chewing gum, coating said sheet of gum with an emulsion maintained at a temperature between about 100.degree. C. and about 200.degree. C., wherein:

b. the coating process is selected from the group of coating processes consisting of printing, film making, adhesive applications and textile dyeing.

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L11: Entry 2 of 3

File: USPT

US-PAT-NO: 5711961

DOCUMENT-IDENTIFIER: US 5711961 A

TITLE: Pharmaceutical compositions based on chewing gum and a method for the preparation thereof

DATE-ISSUED: January 27, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reiner; Alberto	Como			IT
Seneci; Alessandro	Milan			IT

US-CL-CURRENT: 424/441; 424/440, 426/3, 426/5

CLAIMS:

We claim:

1. Chewing gum tablet comprising:

a mixture of a chewing gum base and sugary microgranules;

a component adsorbed onto said sugary microgranules selected from the group consisting of an additive agent and an active ingredient; and

a lacquer coating on the tablet selected from the group consisting of pharmaceutically acceptable celluloses and polyethylene glycols.

2. Chewing gum tablet according to claim 1, wherein said additive agent is a flavoring agent.

3. Chewing gum tablet according to claim 1, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.

4. Chewing gum tablet according to claim 1, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl

cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.

5. Chewing gum tablet according to claim 1, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and polyethylene glycol 400.

6. Chewing gum tablet according to claim 1, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.

7. Chewing gum tablet according to claim 2, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood levels.

8. A method of preparing a tablet, comprising the steps of:

a) freezing chewing gum in pellet form to a temperature of between -20.degree. C. and -25.degree. C. to form frozen gum;

b) grinding said frozen gum to a particle size of between 60 and 190 mesh to form ground chewing gum;

c) adding to said ground chewing gum sugary microgranules having adsorbed onto a surface thereof a component selected from the group consisting of an additive agent and an active ingredient to form a granular mixture;

d) compressing said granular mixture to form tablets; and

e) coating said tablets with a lacquer comprising a pharmaceutically acceptable celluloses or a polyethylene glycol in a solvent.

9. A method according to claim 8, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.

10. A method according to claim 9, wherein said additive agent is selected from the group consisting of a

lubricant and a flavoring agent.

11. A method according to claim 10, wherein said active ingredient is added to the mixture of ground chewing gum, sweetener, lubricant and flavoring agent in the form of microencapsulated or otherwise delayed release coated particles.

12. A method according to claim 8, wherein said solvent is selected from the group consisting of water, an alcohol, acetone, and mixtures thereof.

13. A method according to claim 9, wherein said sweetener is selected from the group consisting of sugars, polyalcohols used as sweeteners, saccharin, acesulfame, aspartame and mixtures thereof.

14. A method according to claim 13, wherein the sugar is selected from the group consisting of dextrose, glucose, sucrose, invert sugar, fructose, mannose and maltose.

15. A method according to claim 13, wherein the polyalcohols are selected from the group consisting of sorbitol, mannitol, maltitol and xylitol.

16. A method according to claim 9, wherein the mixture of gum and sweetener is granulated moist and is dried on a fluid bed.

17. A method according to claim 8, wherein the mixture of said frozen chewing gum pellets and said sugary microgranules is granulated in moistened condition and dried on a fluid bed and then tablets are prepared by compression therefrom.

18. A method according to claim 10, wherein the lubricant is selected from the group consisting of alkali-metal or alkaline-earth metal stearates, stearic acid, hydrogenated vegetable oils and other lubricants used in the preparation of tablets for pharmaceutical use, and is added in an amount of between 0.2% and 2% by weight relative to the weight of the composition.

19. A method according to claim 10, wherein microgranular cellulose and/or precipitated silica are added together with said lubricant.

20. A method according to claim 19, wherein the microgranular cellulose is added in an amount of between 0.1% and 2% by weight.

21. A method according to claim 19, wherein the precipitated silica is added in quantities of between 0.05% and 1% by weight.

22. A method according to claim 8, wherein the flavoring agent is in liquid or powder form.

23. A method according to claim 8, wherein the lacquer is sprayed in a heated vessel with hot air.

24. A chewing gum composition comprising:

a mixture of a chewing gum base and sugary microgranules;
a component adsorbed onto said sugary microgranules selected from the group consisting of an additive agent and an active ingredient; and

a lacquer coating on said microgranules selected from the group consisting of pharmaceutically acceptable cellulosics and polyethylene glycols.

25. Chewing gum composition according to claim 24, wherein said additive agent is a flavoring agent.

26. Chewing gum composition according to claim 24, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.

27. Chewing gum composition according to claim 24, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.

28. Chewing gum composition according to claim 24, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and

polyethylene glycol 400.

29. Chewing gum composition according to claim 24, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.

30. Chewing gum tablet according to claim 26, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood levels.

31. A method of preparing a chewing gum composition, comprising the steps of:

a) providing sugary microgranules having adsorbed onto a surface thereof a component selected from the group consisting of an additive agent and an active ingredient;

b) coating said sugary microgranules with a lacquer comprising a pharmaceutically acceptable celluloses or a polyethylene glycol in a solvent to form coated microgranules;

c) mixing said coated microgranules with frozen ground chewing gum to form a chewing gum composition.

32. A method according to claim 31, wherein said chewing gum is frozen in pellet form to a temperature of between -20.degree. C. and -25.degree. C. and ground to a particle size of between 60 and 190 mesh.

33. A method according to claim 31, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.

34. A method according to claim 31, wherein said additive agent is selected from the group consisting of a lubricant and a flavoring agent.

35. A method according to claim 31, wherein said active ingredient is in the form of microencapsulated or otherwise delayed release coated particles.

36. A method according to claim 31, wherein said solvent is selected from the group consisting of water, an alcohol, acetone, and mixtures thereof.

37. A method according to claim 33, wherein said sweetener is selected from the group consisting of sugars, polyalcohols used as sweeteners, saccharin, acesulfame, aspartame and mixtures thereof.

38. A method according to claim 37, wherein the sugar is selected from the group consisting of dextrose, glucose, sucrose, invert sugar, fructose, mannose and maltose.

39. A method according to claim 37, wherein the polyalcohols are selected from the group consisting of sorbitol, mannitol, maltitol and xylitol.

40. A method according to claim 34, wherein the lubricant is selected from the group consisting of alkali-metal or alkaline-earth metal stearates, stearic acid, hydrogenated vegetable oils and other lubricants used in the preparation of tablets for pharmaceutical use, and is added in an amount of between 0.2% and 2% by weight relative to the weight of the composition.

41. A method according to claim 34, wherein the flavoring agent is in liquid or powder form.

42. A method according to claim 31, wherein the lacquer is sprayed in a heated vessel with hot air.

43. A method according to claim 31 and further including the step of compressing the chewing gum composition to form a tablet.

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L11: Entry 2 of 3

File: USPT

DOCUMENT-IDENTIFIER: US 5711961 A

TITLE: Pharmaceutical compositions based on chewing gum and a method for the preparation thereof

Detailed Description Paragraph Table (1):

1. VITAMIN C - 1.5 g of gum containing 250 mg of Vitamin C. Gum base 0.800 g Sorbitol 0.400 g Vitamin C, 98% coated 0.250 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 2. TRICLOSAN 1.4 g of gum containing 0.010 mg of Triclosan Gum base 0.850 Sorbitol 0.410 g Triclosan 0.00001 g Aspartame 0.09999 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 3. CETYL PYRIDINIUM - 1.5 g of gum containing 1 mg of cetyl pyridinium Gum base 0.950 g Sorbitol 0.500 g Cetyl pyridinium 0.001 g Aspartame 0.010 g Flavourings 0.014 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 4. DIMENHYDRINATE - 1.5 g of gum containing 25 mg of dimenhydrinate Gum base 0.950 g Sorbitol 0.475 g Dimenhydrinate, 50% microspheres 0.036 g Dimenhydrinate, normal 0.007 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 5. CAMOMILE - 1.5 g of gum containing 250 mg of extract of camomile. Gum base 0.800 g Sorbitol 0.415 g Camomile extract 0.250 g Aspartame 0.010 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 6. ASPIRIN - 1.5 g of gum containing 300 mg of aspirin Gum base 0.750 g Sorbitol 0.400 g Aspirin 0.300 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 7. B-CAROTENE + VITAMIN E - 1.5 g of gum containing 25 mg of vitamin E and 50 mg of B-carotene Gum base 0.850 g Sorbitol 0.500 g Vitamin E, 50% coated 0.050 g .beta.-carotene 0.050 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g

CLAIMS:

1. Chewing gum tablet comprising:a mixture of a chewing gum base and sugary microgranules;a lacquer coating on the tablet selected from the group consisting of pharmaceutically acceptable celluloses and polyethylene glycols.2. Chewing gum tablet according to claim 1, wherein said additive agent is a flavoring agent.3. Chewing gum tablet according to claim 1, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.4. Chewing gum tablet according to claim 1, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.5. Chewing gum tablet according to claim 1, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and polyethylene glycol 400.6. Chewing gum tablet according to claim 1, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.7. Chewing gum tablet according to claim 2, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood

levels.

- a) freezing chewing gum in pellet form to a temperature of between -20.degree. C. and -25.degree. C. to form frozen gum;
- b) grinding said frozen gum to a particle size of between 60 and 190 mesh to form ground chewing gum;
- c) adding to said ground chewing gum sugary microgranules having adsorbed onto a surface thereof a component selected from the group consisting of an additive agent and an active ingredient to form a granular mixture;
- e) coating said tablets with a lacquer comprising a pharmaceutically acceptable celluloses or a polyethylene glycol in a solvent.

9. A method according to claim 8, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.

11. A method according to claim 10, wherein said active ingredient is added to the mixture of ground chewing gum, sweetener, lubricant and flavoring agent in the form of microencapsulated or otherwise delayed release coated particles.

17. A method according to claim 8, wherein the mixture of said frozen chewing gum pellets and said sugary microgranules is granulated in moistened condition and dried on a fluid bed and then tablets are prepared by compression therefrom.

24. A chewing gum composition comprising:

a mixture of a chewing gum base and sugary microgranules;

a lacquer coating on said microgranules selected from the group consisting of pharmaceutically acceptable celluloses and polyethylene glycals.

25. Chewing gum composition according to claim 24, wherein said additive agent is a flavoring agent.

26. Chewing gum composition according to claim 24, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.

27. Chewing gum composition according to claim 24, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.

28. Chewing gum composition according to claim 24, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and polyethylene glycol 400.

29. Chewing gum composition according to claim 24, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.

30. Chewing gum tablet according to claim 26, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood levels.

31. A method of preparing a chewing gum composition, comprising the steps of:

- b) coating said sugary microgranules with a lacquer comprising a pharmaceutically acceptable celluloses or a polyethylene glycol in a solvent to form coated microgranules;
- c) mixing said coated microgranules with frozen ground chewing gum to form a chewing gum composition.

32. A method according to claim 31, wherein said chewing gum is frozen in pellet form to a temperature of between -20.degree. C. and -25.degree. C. and ground to a particle size of between 60 and 190 mesh.

33. A method according to claim 31, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.

43. A method according to claim 31 and further including the step of compressing the chewing gum composition to form a

tablet.

WEST

 Generate Collection

L11: Entry 2 of 3

File: USPT

Jan 27, 1998

US-PAT-NO: 5711961

DOCUMENT-IDENTIFIER: US 5711961 A

TITLE: Pharmaceutical compositions based on chewing gum and a method for the preparation thereof

DATE-ISSUED: January 27, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reiner; Alberto	Como			IT
Seneci; Alessandro	Milan			IT

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
APR Applied Pharma Research S.A.	Stabio			CH	03

APPL-NO: 08/ 619459 [PALM]

DATE FILED: May 29, 1996

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
IT	MI94A1586	July 26, 1994

PCT-DATA:

APPL-NO	DATE-FILED	PUB-NO	PUB-DATE	371-DATE	102(E)-DATE
PCT/EP95/02816	July 15, 1995	WO96/03111	Feb 8, 1996	May 29, 1996	May 29, 1996

INT-CL: [06] A61 K 9/68

US-CL-ISSUED: 424/441; 424/440, 426/5, 426/3

US-CL-CURRENT: 424/441; 424/440, 426/3, 426/5

FIELD-OF-SEARCH: 424/440, 424/441, 426/5, 426/3

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>3826847</u>	July 1974	Ogawa	426/3
<input type="checkbox"/> <u>4238510</u>	December 1980	Cherukuri et al.	426/5
<input type="checkbox"/> <u>4452821</u>	June 1984	Gergely	426/5
<input type="checkbox"/> <u>4792453</u>	December 1988	Reed	426/5
<input type="checkbox"/> <u>4929447</u>	May 1990	Yang	424/440
<input type="checkbox"/> <u>5458890</u>	October 1995	Williford	426/3

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0 551 700 A1	July 1993	EP	

ART-UNIT: 152

PRIMARY-EXAMINER: Page; Thurman K.

ASSISTANT-EXAMINER: Faulkner; D.

ABSTRACT:

Chewing gum tablets and their methods of preparation are disclosed. The gum tablets contain a mixture of chewing gum base and sugary microgranules with an additive agent and an active ingredient adsorbed onto their surface. A lacquer coating on the tablet contains cellulose and polyethylene glycols. The sugary microgranules are delayed release coated particles. The chewing gums act as vehicles for active ingredients. These active ingredients may be used alone or in combination in normal physical form in the form of coated microspheres.

43 Claims, 0 Drawing figures

WEST**End of Result Set**

L11: Entry 3 of 3

File: USPT

US-PAT-NO: 5380530

DOCUMENT-IDENTIFIER: US 5380530 A

TITLE: Oral care composition coated gum

DATE-ISSUED: January 10, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hill; Ira D.	Locust	NJ		

US-CL-CURRENT: 424/440; 424/439, 424/48, 514/900, 514/902, 514/975

CLAIMS:

What is claimed is:

1. A therapeutic preparation effective in treating localized conditions of the mouth, teeth and gums, said conditions being selected from the group consisting of plaque, gingivitis, hypersensitivity, stomatitis and microbes in the mouth, said preparation being in the form of a chewing gum wherein:
 - A. the chewing gum is coated with an emulsion comprising an ingestible surfactant-emulsifier and a polydimethyl siloxane insoluble in said surfactant-emulsifier,
 - B. the emulsion is applied to the chewing gum by means of a coating process selected from the group of coating processes consisting of printing, film coating, adhesive applications and textile dyeing, and
 - C. the emulsion coating on said gum is releasable during chewing, at a therapeutic effective rate and in a therapeutic effective amount.
2. The therapeutic preparation according to claim 1, wherein the emulsion coating comprises a therapeutic substance selected from the group consisting of antimicrobials, microbially active stannous fluoride,

chlorhexidine, triclosan, zinc chloride, cationic antimicrobial agents, cetylpyridinium chloride, antioxidants, propyl gallate, enzymes, antibiotics, tetracycline, mineral salts, pectin, strontium chloride, potassium nitrate, metronidazole benzocaine, analgesics for mouth and throat discomfort, sanguinarine extract, stearoyl-2-lactate, cough and cold remedies, and remineralizing substances.

3. The therapeutic preparation according to claim 1, wherein said coating releases during chewing at an effective plaque disrupting rate and in an effective plaque disrupting amount.

4. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride, releasable at an effective ant gingivitis rate and in an effective ant gingivitis amount.

5. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective hypersensitivity treatment rate and in an effective hypersensitivity treatment level.

6. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective stomatitis treatment rate and at an effective stomatitis treatment level.

7. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises chlorhexidine releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

8. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises triclosan releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

9. The coated chewing gum according to claim 1, wherein the ingestible surfactant is selected from the group consisting of:

sodium lauryl sulfate,
sodium lauryl sarcosinate,
polyethylene glycol stearate,
polyethylene glycol monostearate,
coconut monoglyceride sulfonates,
block copolymers of polyoxyethylene and polyoxybutylene,
alkylpolyglycol ether carboxylates,
polyethylene derivatives of sorbitan esters,
propoxylated cetyl alcohol,
block copolymers comprising a congeneric mixture of conjugated polyoxybutylene and polyoxyethylene compounds having as a hydrophobe a polyoxybutylene polymer of at least 1200 molecular weight,
a salt of a fatty acid (soap powder), and emulsified polyethylene glycols, polyethylene glycol oleate, polyethylene glycol beeswax and monomethyl ether polyethylene glycol.

10. The coated chewing gum according to claim 1, wherein the polydimethyl siloxane has the general structure:
##STR2## wherein n represents a whole number from between about 100 and 5,000, and the polydimethyl siloxane has a viscosity from between about 350 and about 12,500 centistokes.

11. A coated chewing gum according to claim 1, wherein the coating is applied to the chewing gum at from between about 0.5% and about 6% by weight of the gum, or from between about 10 mg/piece and about 100 mg/piece.

12. A coated chewing gum according to claim 9, wherein the ingestible surfactant is a polyoxyethylene-polyoxybutylene block copolymer.

13. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the

chewing gum at an elevated temperature by means of a printing process.

14. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a film coating process.

15. A chewing gum according to claim 3, wherein the plaque disrupting, melt-emulsion coating is applied to the chewing gum at an elevated temperature by means of an adhesive application process.

16. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a textile dyeing process.

17. A method of manufacturing a therapeutic chewing gum comprising, preparing a sheet of chewing gum, coating said sheet of gum with an emulsion maintained at a temperature between about 100.degree. C. and about 200.degree. C., wherein:

a. the emulsion comprises an ingestible surfactant or emulsifier and a polydimethyl siloxane insoluble in said surfactant or emulsifier, and

b. the coating process is selected from the group of coating processes consisting of printing, film making, adhesive applications and textile dyeing.

WEST**End of Result Set**

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L11: Entry 3 of 3

File: USPT

DOCUMENT-IDENTIFIER: US 5380530 A

TITLE: Oral care composition coated gum

Brief Summary Text (76):

A third embodiment of the invention comprises therapeutic chewing gums characterized by an emulsion coating as described earlier, wherein the emulsion coating contains a therapeutic substance such as stannous fluoride and the emulsion coating-therapeutic substance mixture is released into the oral cavity from the gum, during chewing, at a predetermined rate and in a predetermined amount. Other therapeutic substances include: oral care medicaments such as chlorhexidine, triclosan, potassium nitrate, various quaternaries, the active essential oils in Listerine.RTM., and the like, various antibiotics, analgesics, oral discomfort relief active ingredients, and the like.

Brief Summary Text (132):triclosan,**Brief Summary Paragraph Table (2):**

TABLE II	THERAPEUTIC
CHEWING GUMS Type of Therapeutic Substance Added to Emulsion Coating (% by weight)	Coating Mixture Abrasive for
From Table I cleaning and EXAMPLE (qs to 100%)	From Table I cleaning and EXAMPLE (qs to 100%)
tartar control	Antimicrobial Antibiotic Dry Mouth Oral Dicomfort
10. #1 silica dentifrice grade	10. #1 silica dentifrice grade
(10-30) 11 #3 stannous fluoride (1.2-4.0) 12 #4 Mineral salts (saliva equiv.) sodium fluoride (2 ppm - final) 13 #5 tetracycline	(10-30) 11 #3 stannous fluoride (1.2-4.0) 12 #4 Mineral salts (saliva equiv.) sodium fluoride (2 ppm - final) 13 #5 tetracycline
(0.5-2.5) 14 #6 benzocaine (4.0-10.0) 15 #5 potassium nitrate (5.0) 16 #3 pectin (5.0-15.0) 17 #8 <u>triclosan</u> (0.2-1.0) 18 #9	(0.5-2.5) 14 #6 benzocaine (4.0-10.0) 15 #5 potassium nitrate (5.0) 16 #3 pectin (5.0-15.0) 17 #8 <u>triclosan</u> (0.2-1.0) 18 #9
Kaolin (10-30)	Kaolin (10-30)

CLAIMS:

1. A therapeutic preparation effective in treating localized conditions of the mouth, teeth and gums, said conditions being selected from the group consisting of plaque, gingivitis, hypersensitivity, stomatitis and microbes in the mouth, said preparation being in the form of a chewing gum wherein:

A. the chewing gum is coated with an emulsion comprising an ingestible surfactant-emulsifier and a polydimethyl siloxane insoluble in said surfactant-emulsifier,

B. the emulsion is applied to the chewing gum by means of a coating process selected from the group of coating processes consisting of printing, film coating, adhesive applications and textile dyeing, and

C. the emulsion coating on said gum is releasable during chewing, at a therapeutic effective rate and in a therapeutic effective amount.

2. The therapeutic preparation according to claim 1, wherein the emulsion coating comprises a therapeutic substance selected from the group consisting of antimicrobials, microbially active stannous fluoride, chlorhexidine, triclosan, zinc chloride, cationic antimicrobial agents, cetylpyridinium chloride, antioxidants, propyl gallate, enzymes, antibiotics, tetracycline, mineral salts, pectin, strontium chloride, potassium nitrate, metronidazole benzocaine, analgesics for mouth and throat discomfort, sanguinarine extract, stearoyl-2-lactate, cough and cold remedies, and remineralizing substances.

3. The therapeutic preparation according to claim 1, wherein said coating releases during chewing at an effective plaque disrupting rate and in an effective plaque disrupting amount.

4. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous

fluoride, releasable at an effective antigingivitis rate and in an effective antigingivitis amount.

5. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective hypersensitivity treatment rate and in an effective hypersensitivity treatment level.

6. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective stomatitis treatment rate and at an effective stomatitis treatment level.

7. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises chlorhexidine releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

8. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises triclosan releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

9. The coated chewing gum according to claim 1, wherein the ingestible surfactant is selected from the group consisting of:

10. The coated chewing gum according to claim 1, wherein the polydimethyl siloxane has the general structure: ##STR2## wherein n represents a whole number from between about 100 and 5,000, and the polydimethyl siloxane has a viscosity from between about 350 and about 12,500 centistokes.

11. A coated chewing gum according to claim 1, wherein the coating is applied to the chewing gum at from between about 0.5% and about 6% by weight of the gum, or from between about 10 mg/piece and about 100 mg/piece.

12. A coated chewing gum according to claim 9, wherein the ingestible surfactant is a polyoxyethylene-polyoxybutylene block copolymer.

13. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a printing process.

14. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a film coating process.

15. A chewing gum according to claim 3, wherein the plaque disrupting, melt-emulsion coating is applied to the chewing gum at an elevated temperature by means of an adhesive application process.

16. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a textile dyeing process.

17. A method of manufacturing a therapeutic chewing gum comprising, preparing a sheet of chewing gum, coating said sheet of gum with an emulsion maintained at a temperature between about 100.degree. C. and about 200.degree. C., wherein:

b. the coating process is selected from the group of coating processes consisting of printing, film making, adhesive applications and textile dyeing.

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L5: Entry 1 of 3

File: USPT

Mar 30, 1999

US-PAT-NO: 5888491

DOCUMENT-IDENTIFIER: US 5888491 A

TITLE: Optionally crosslinkable coatings, compositions and methods of use

DATE-ISSUED: March 30, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mitra; Sumita B.	West St. Paul	MN		
Shelburne; Charles E.	Brooklyn Park	MN		
Rozzi; Sharon M.	West Lakeland Township County of Washington	MN		
Kedrowski; Brant L.	Minneapolis	MN		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Minnesota Mining and Manufacturing Company	St. Paul	MN			02

APPL-NO: 08/ 347861 [PALM]

DATE FILED: December 1, 1994

PARENT-CASE:

CROSS-REFERENCE TO RELATED APPLICATION This application is a continuation-in-part, application of U.S. application Ser. No. 08/163,028 filed Dec. 6, 1993, now pending.

INT-CL: [06] A61 K 31/74

US-CL-ISSUED: 424/78.31; 424/49, 523/109

US-CL-CURRENT: 424/78.31; 424/49, 523/109

FIELD-OF-SEARCH: 424/78.31, 424/49, 523/109

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>4161518</u>	July 1979	Wen et al.	
<input type="checkbox"/> <u>4400159</u>	August 1983	Orlowski	433/202
<input type="checkbox"/> <u>4663202</u>	May 1987	Causton	
<input type="checkbox"/> <u>4693935</u>	September 1987	Mazurek	
<input type="checkbox"/> <u>4728571</u>	March 1988	Clemens et al.	
<input type="checkbox"/> <u>4872936</u>	October 1989	Engelbrecht	
<input type="checkbox"/> <u>4950479</u>	August 1990	Hill	424/439
<input type="checkbox"/> <u>4972037</u>	November 1990	Garbe et al.	
<input type="checkbox"/> <u>4981902</u>	January 1991	Mitra et al.	
<input type="checkbox"/> <u>4981903</u>	January 1991	Garbe et al.	
<input type="checkbox"/> <u>4985155</u>	January 1991	Yamada et al.	
<input type="checkbox"/> <u>5021477</u>	June 1991	Garbe et al.	
<input type="checkbox"/> <u>5032387</u>	July 1991	Hill et al.	424/49
<input type="checkbox"/> <u>5032455</u>	July 1991	Dana et al.	
<input type="checkbox"/> <u>5078988</u>	January 1992	Lin et al.	
<input type="checkbox"/> <u>5086107</u>	February 1992	Arai et al.	
<input type="checkbox"/> <u>5154762</u>	October 1992	Mitra et al.	
<input type="checkbox"/> <u>5188822</u>	February 1993	Viccaro et al.	
<input type="checkbox"/> <u>5244696</u>	September 1993	Hazan et al.	
<input type="checkbox"/> <u>5322890</u>	June 1994	Ando et al.	
<input type="checkbox"/> <u>5364693</u>	November 1994	Moren	428/263

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0 352 339	January 1990	EP	
0412770	February 1991	EP	
0412771	February 1991	EP	
0528457	February 1993	EP	
1104786	October 1965	GB	
91/13608	March 1991	WO	
9323009	November 1993	WO	

OTHER PUBLICATIONS

A. Gaffar, J. Afflitto, N. Nuran, "Toothbrush Chemistry" Am. Chem. Soc. (Jul. 1993).

ART-UNIT: 165

PRIMARY-EXAMINER: Page; Thurman K.

ASSISTANT-EXAMINER: Faulkner; D.

ABSTRACT:

Coatings for hard tissue and surfaces of the oral environment are provided that reduce adhesion of bacteria and proteinaceous substances to these surfaces. Methods of reducing adhesion of these materials to such surfaces, and polymers for incorporation into such coatings are also provided.

40 Claims, 3 Drawing figures

WEST Generate Collection

L5: Entry 2 of 3.

File: USPT

DOCUMENT-IDENTIFIER: US 5711961 A

TITLE: Pharmaceutical compositions based on chewing gum and a method for the preparation thereof

Detailed Description Paragraph Table (1):

1. VITAMIN C - 1.5 g of gum containing 250 mg of Vitamin C. Gum base 0.800 g Sorbitol 0.400 g Vitamin C, 98% coated 0.250 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 2. TRICLOSAN 1.4 g of gum containing 0.010 mg of Triclosan Gum base 0.850 Sorbitol 0.410 g Triclosan 0.00001 g Aspartame 0.09999 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 3. CETYL PYRIDINIUM - 1.5 g of gum containing 1 mg of cetyl pyridinium Gum base 0.950 g Sorbitol 0.500 g Cetyl pyridinium 0.001 g Aspartame 0.010 g Flavourings 0.014 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 4. DIMENHYDRINATE - 1.5 g of gum containing 25 mg of dimenhydrinate Gum base 0.950 g Sorbitol 0.475 g Dimenhydrinate, 50% microspheres 0.036 g Dimenhydrinate, normal 0.007 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 5. CAMOMILE - 1.5 g of gum containing 250 mg of extract of camomile. Gum base 0.800 g Sorbitol 0.415 g Camomile extract 0.250 g Aspartame 0.010 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 6. ASPIRIN - 1.5 g of gum containing 300 mg of aspirin Gum base 0.750 g Sorbitol 0.400 g Aspirin 0.300 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 7. B-CAROTENE + VITAMIN E - 1.5 g of gum containing 25 mg of vitamin E and 50 mg of B-carotene Gum base 0.850 g Sorbitol 0.500 g Vitamin E, 50% coated 0.050 g .beta.-carotene 0.050 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g

CLAIMS:

1. Chewing gum tablet comprising:a mixture of a chewing gum base and sugary microgranules;a lacquer coating on the tablet selected from the group consisting of pharmaceutically acceptable celluloses and polyethylene glycols.2. Chewing gum tablet according to claim 1, wherein said additive agent is a flavoring agent.3. Chewing gum tablet according to claim 1, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.4. Chewing gum tablet according to claim 1, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.5. Chewing gum tablet according to claim 1, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and polyethylene glycol 400.6. Chewing gum tablet according to claim 1, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.7. Chewing gum tablet according to claim 2, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood

levels.

- a) freezing chewing gum in pellet form to a temperature of between -20.degree. C. and -25.degree. C. to form frozen gum;
- b) grinding said frozen gum to a particle size of between 60 and 190 mesh to form ground chewing gum;
- c) adding to said ground chewing gum sugary microgranules having adsorbed onto a surface thereof a component selected from the group consisting of an additive agent and an active ingredient to form a granular mixture;
- e) coating said tablets with a lacquer comprising a pharmaceutically acceptable celluloses or a polyethylene glycol in a solvent.

9. A method according to claim 8, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.

11. A method according to claim 10, wherein said active ingredient is added to the mixture of ground chewing gum, sweetener, lubricant and flavoring agent in the form of microencapsulated or otherwise delayed release coated particles.

17. A method according to claim 8, wherein the mixture of said frozen chewing gum pellets and said sugary microgranules is granulated in moistened condition and dried on a fluid bed and then tablets are prepared by compression therefrom.

24. A chewing gum composition comprising:

a mixture of a chewing gum base and sugary microgranules;

a lacquer coating on said microgranules selected from the group consisting of pharmaceutically acceptable celluloses and polyethylene glycols.

25. Chewing gum composition according to claim 24, wherein said additive agent is a flavoring agent.

26. Chewing gum composition according to claim 24, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.

27. Chewing gum composition according to claim 24, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.

28. Chewing gum composition according to claim 24, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and polyethylene glycol 400.

29. Chewing gum composition according to claim 24, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.

30. Chewing gum tablet according to claim 26, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood levels.

31. A method of preparing a chewing gum composition, comprising the steps of:

- b) coating said sugary microgranules with a lacquer comprising a pharmaceutically acceptable celluloses or a polyethylene glycol in a solvent to form coated microgranules;
- c) mixing said coated microgranules with frozen ground chewing gum to form a chewing gum composition.

32. A method according to claim 31, wherein said chewing gum is frozen in pellet form to a temperature of between -20.degree. C. and -25.degree. C. and ground to a particle size of between 60 and 190 mesh.

33. A method according to claim 31, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.

43. A method according to claim 31 and further including the step of compressing the chewing gum composition to form a

tablet.

WEST

LS: Entry 2 of 3

File: USPT

Jan 27, 1998

US-PAT-NO: 5711961

DOCUMENT-IDENTIFIER: US 5711961 A

TITLE: Pharmaceutical compositions based on chewing gum and a method for the preparation thereof

DATE-ISSUED: January 27, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reiner; Alberto	Como			IT
Seneci; Alessandro	Milan			IT

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
APR Applied Pharma Research S.A.	Stabio			CH	03

APPL-NO: 08/ 619459 [PALM]

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COUNTRY	APPL-NO	APPL-DATE
IT	MI94A1586	July 26, 1994

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PCT/EP95/02816	July 15, 1995	WO96/03111	Feb 8, 1996	May 29, 1996	May 29, 1996

INT-CL: [06] A61 K 9/68

US-CL-ISSUED: 424/441; 424/440, 426/5, 426/3

US-CL-CURRENT: 424/441; 424/440, 426/3, 426/5

FIELD-OF-SEARCH: 424/440, 424/441, 426/5, 426/3

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>3826847</u>	July 1974	Ogawa	426/3
<input type="checkbox"/> <u>4238510</u>	December 1980	Cherukuri et al.	426/5
<input type="checkbox"/> <u>4452821</u>	June 1984	Gergely	426/5
<input type="checkbox"/> <u>4792453</u>	December 1988	Reed	426/5
<input type="checkbox"/> <u>4929447</u>	May 1990	Yang	424/440
<input type="checkbox"/> <u>5458890</u>	October 1995	Williford	426/3

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0 551 700 A1	July 1993	EP	

ART-UNIT: 152

PRIMARY-EXAMINER: Page; Thurman K.

ASSISTANT-EXAMINER: Faulkner; D.

ABSTRACT:

Chewing gum tablets and their methods of preparation are disclosed. The gum tablets contain a mixture of chewing gum base and sugary microgranules with an additive agent and an active ingredient adsorbed onto their surface. A lacquer coating on the tablet contains cellulose and polyethylene glycols. The sugary microgranules are delayed release coated particles. The chewing gums act as vehicles for active ingredients. These active ingredients may be used alone or in combination in normal physical form in the form of coated microspheres.

43 Claims, 0 Drawing figures

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L5: Entry 3 of 3

File: USPT

US-PAT-NO: 5380530

DOCUMENT-IDENTIFIER: US 5380530 A

TITLE: Oral care composition coated gum

DATE-ISSUED: January 10, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hill; Ira D.	Locust	NJ		

US-CL-CURRENT: 424/440; 424/439, 424/48, 514/900, 514/902, 514/975

CLAIMS:

What is claimed is:

1. A therapeutic preparation effective in treating localized conditions of the mouth, teeth and gums, said conditions being selected from the group consisting of plaque, gingivitis, hypersensitivity, stomatitis and microbes in the mouth, said preparation being in the form of a chewing gum wherein:

A. the chewing gum is coated with an emulsion comprising an ingestible surfactant-emulsifier and a polydimethyl siloxane insoluble in said surfactant-emulsifier,

B. the emulsion is applied to the chewing gum by means of a coating process selected from the group of coating processes consisting of printing, film coating, adhesive applications and textile dyeing, and

C. the emulsion coating on said gum is releasable during chewing, at a therapeutic effective rate and in a therapeutic effective amount.

2. The therapeutic preparation according to claim 1, wherein the emulsion coating comprises a therapeutic substance selected from the group consisting of antimicrobials, microbially active stannous fluoride,

chlorhexidine, triclosan, zinc chloride, cationic antimicrobial agents, cetylpyridinium chloride, antioxidants, propyl gallate, enzymes, antibiotics, tetracycline, mineral salts, pectin, strontium chloride, potassium nitrate, metronidazole benzocaine, analgesics for mouth and throat discomfort, sanguinarine extract, stearoyl-2-lactate, cough and cold remedies, and remineralizing substances.

3. The therapeutic preparation according to claim 1, wherein said coating releases during chewing at an effective plaque disrupting rate and in an effective plaque disrupting amount.

4. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride, releasable at an effective ant gingivitis rate and in an effective ant gingivitis amount.

5. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective hypersensitivity treatment rate and in an effective hypersensitivity treatment level.

6. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective stomatitis treatment rate and at an effective stomatitis treatment level.

7. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises chlorhexidine releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

8. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises triclosan releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

9. The coated chewing gum according to claim 1, wherein the ingestible surfactant is selected from the group consisting of:

sodium lauryl sulfate,
sodium lauryl sarcosinate,
polyethylene glycol stearate,
polyethylene glycol monostearate,
coconut monoglyceride sulfonates,
block copolymers of polyoxyethylene and polyoxybutylene,
alkylpolyglycol ether carboxylates,
polyethylene derivatives of sorbitan esters,
propoxylated cetyl alcohol,
block copolymers comprising a congeneric mixture of conjugated polyoxybutylene and polyoxyethylene compounds having as a hydrophobe a polyoxybutylene polymer of at least 1200 molecular weight,
a salt of a fatty acid (soap powder), and emulsified polyethylene glycols, polyethylene glycol oleate, polyethylene glycol beeswax and monomethyl ether polyethylene glycol.

10. The coated chewing gum according to claim 1, wherein the polydimethyl siloxane has the general structure:
##STR2## wherein n represents a whole number from between about 100 and 5,000, and the polydimethyl siloxane has a viscosity from between about 350 and about 12,500 centistokes.

11. A coated chewing gum according to claim 1, wherein the coating is applied to the chewing gum at from between about 0.5% and about 6% by weight of the gum, or from between about 10 mg/piece and about 100 mg/piece.

12. A coated chewing gum according to claim 9, wherein the ingestible surfactant is a polyoxyethylene-polyoxybutylene block copolymer.

13. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the

chewing gum at an elevated temperature by means of a printing process.

14. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a film coating process.

15. A chewing gum according to claim 3, wherein the plaque disrupting, melt-emulsion coating is applied to the chewing gum at an elevated temperature by means of an adhesive application process.

16. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a textile dyeing process.

17. A method of manufacturing a therapeutic chewing gum comprising, preparing a sheet of chewing gum, coating said sheet of gum with an emulsion maintained at a temperature between about 100.degree. C. and about 200.degree. C., wherein:

a. the emulsion comprises an ingestible surfactant or emulsifier and a polydimethyl siloxane insoluble in said surfactant or emulsifier, and

b. the coating process is selected from the group of coating processes consisting of printing, film making, adhesive applications and textile dyeing.

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LS: Entry 3 of 3

File: USPT

DOCUMENT-IDENTIFIER: US 5380530 A

TITLE: Oral care composition coated gum

Brief Summary Text (76):

A third embodiment of the invention comprises therapeutic chewing gums characterized by an emulsion coating as described earlier, wherein the emulsion coating contains a therapeutic substance such as stannous fluoride and the emulsion coating-therapeutic substance mixture is released into the oral cavity from the gum, during chewing, at a predetermined rate and in a predetermined amount. Other therapeutic substances include: oral care medicaments such as chlorhexidine, triclosan, potassium nitrate, various quaternaries, the active essential oils in Listerine.RTM., and the like, various antibiotics, analgesics, oral discomfort relief active ingredients, and the like.

Brief Summary Text (132):triclosan,**Brief Summary Paragraph Table (2):**

		THERAPEUTIC													
		CHEWING GUMS	Type of Therapeutic Substance Added to Emulsion Coating (% by weight)	Coating Mixture	Abrasives for	From Table I	cleaning and EXAMPLE (qs to 100%)	tartar control	Antimicrobial	Antibiotic	Dry Mouth	Oral Dicomfort			
(10-30)	11 #3	stannous fluoride (1.2-4.0)	12 #4	Mineral salts (saliva equiv.)	sodium fluoride (2 ppm - final)	13 #5	tetracycline (0.5-2.5)	14 #6	benzocaine (4.0-10.0)	15 #5	potassium nitrate (5.0)	16 #3 pectin (5.0-15.0)	17 #8 <u>triclosan</u> (0.2-1.0)	18 #9 Kaolin (10-30)	10. #1 silica dentifrice grade

CLAIMS:

1. A therapeutic preparation effective in treating localized conditions of the mouth, teeth and gums, said conditions being selected from the group consisting of plaque, gingivitis, hypersensitivity, stomatitis and microbes in the mouth, said preparation being in the form of a chewing gum wherein:

A. the chewing gum is coated with an emulsion comprising an ingestible surfactant-emulsifier and a polydimethyl siloxane insoluble in said surfactant-emulsifier,

B. the emulsion is applied to the chewing gum by means of a coating process selected from the group of coating processes consisting of printing, film coating, adhesive applications and textile dyeing, and

C. the emulsion coating on said gum is releasable during chewing, at a therapeutic effective rate and in a therapeutic effective amount.

2. The therapeutic preparation according to claim 1, wherein the emulsion coating comprises a therapeutic substance selected from the group consisting of antimicrobials, microbially active stannous fluoride, chlorhexidine, triclosan, zinc chloride, cationic antimicrobial agents, cetylpyridinium chloride, antioxidants, propyl gallate, enzymes, antibiotics, tetracycline, mineral salts, pectin, strontium chloride, potassium nitrate, metronidazole benzocaine, analgesics for mouth and throat discomfort, sanguinarine extract, stearoyl-2-lactate, cough and cold remedies, and remineralizing substances.

3. The therapeutic preparation according to claim 1, wherein said coating releases during chewing at an effective plaque disrupting rate and in an effective plaque disrupting amount.

4. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous

fluoride, releasable at an effective antigingivitis rate and in an effective antigingivitis amount.

5. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective hypersensitivity treatment rate and in an effective hypersensitivity treatment level.

6. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective stomatitis treatment rate and at an effective stomatitis treatment level.

7. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises chlorhexidine releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

8. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises triclosan releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

9. The coated chewing gum according to claim 1, wherein the ingestible surfactant is selected from the group consisting of:

10. The coated chewing gum according to claim 1, wherein the polydimethyl siloxane has the general structure: ##STR2## wherein n represents a whole number from between about 100 and 5,000, and the polydimethyl siloxane has a viscosity from between about 350 and about 12,500 centistokes.

11. A coated chewing gum according to claim 1, wherein the coating is applied to the chewing gum at from between about 0.5% and about 6% by weight of the gum, or from between about 10 mg/piece and about 100 mg/piece.

12. A coated chewing gum according to claim 9, wherein the ingestible surfactant is a polyoxyethylene-polyoxybutylene block copolymer.

13. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a printing process.

14. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a film coating process.

15. A chewing gum according to claim 3, wherein the plaque disrupting, melt-emulsion coating is applied to the chewing gum at an elevated temperature by means of an adhesive application process.

16. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a textile dyeing process.

17. A method of manufacturing a therapeutic chewing gum comprising, preparing a sheet of chewing gum, coating said sheet of gum with an emulsion maintained at a temperature between about 100.degree. C. and about 200.degree. C., wherein:

b. the coating process is selected from the group of coating processes consisting of printing, film making, adhesive applications and textile dyeing.

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<i>DB=USPT,JPAB,EPAB,DWPI,TDBD; PLUR=NO; OP=ADJ</i>			
<u>L7</u>	l6 and triclosan	2	<u>L7</u>
<u>L6</u>	l4 and active.clm.	18	<u>L6</u>
<u>L5</u>	l2 and l4	3	<u>L5</u>
<u>L4</u>	l1 and coating.clm.	138	<u>L4</u>
<u>L3</u>	l2 and triclosan.clm.	9	<u>L3</u>
<u>L2</u>	l1 and triclosan	33	<u>L2</u>
<u>L1</u>	chewing gum.clm.	1007	<u>L1</u>

END OF SEARCH HISTORY

WEST

L7: Entry 1 of 2

File: USPT

US-PAT-NO: 5711961

DOCUMENT-IDENTIFIER: US 5711961 A

TITLE: Pharmaceutical compositions based on chewing gum and a method for the preparation thereof

DATE-ISSUED: January 27, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reiner; Alberto	Como			IT
Seneci; Alessandro	Milan			IT

US-CL-CURRENT: 424/441; 424/440, 426/3, 426/5

CLAIMS:

We claim:

1. Chewing gum tablet comprising:a mixture of a chewing gum base and sugary microgranules;a component adsorbed onto said sugary microgranules selected from the group consisting of an additive agent and an active ingredient; anda lacquer coating on the tablet selected from the group consisting of pharmaceutically acceptable celluloses and polyethylene glycols.2. Chewing gum tablet according to claim 1, wherein said additive agent is a flavoring agent.3. Chewing gum tablet according to claim 1, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.4. Chewing gum tablet according to claim 1, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl

cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.

5. Chewing gum tablet according to claim 1, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and polyethylene glycol 400.

6. Chewing gum tablet according to claim 1, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.

7. Chewing gum tablet according to claim 2, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood levels.

8. A method of preparing a tablet, comprising the steps of:

a) freezing chewing gum in pellet form to a temperature of between -20.degree. C. and -25.degree. C. to form frozen gum;

b) grinding said frozen gum to a particle size of between 60 and 190 mesh to form ground chewing gum;

c) adding to said ground chewing gum sugary microgranules having adsorbed onto a surface thereof a component selected from the group consisting of an additive agent and an active ingredient to form a granular mixture;

d) compressing said granular mixture to form tablets; and

e) coating said tablets with a lacquer comprising a pharmaceutically acceptable celluloses or a polyethylene glycol in a solvent.

9. A method according to claim 8, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.

10. A method according to claim 9, wherein said additive agent is selected from the group consisting of a

lubricant and a flavoring agent.

11. A method according to claim 10, wherein said active ingredient is added to the mixture of ground chewing gum, sweetener, lubricant and flavoring agent in the form of microencapsulated or otherwise delayed release coated particles.

12. A method according to claim 8, wherein said solvent is selected from the group consisting of water, an alcohol, acetone, and mixtures thereof.

13. A method according to claim 9, wherein said sweetener is selected from the group consisting of sugars, polyalcohols used as sweeteners, saccharin, acesulfame, aspartame and mixtures thereof.

14. A method according to claim 13, wherein the sugar is selected from the group consisting of dextrose, glucose, sucrose, invert sugar, fructose, mannose and maltose.

15. A method according to claim 13, wherein the polyalcohols are selected from the group consisting of sorbitol, mannitol, maltitol and xylitol.

16. A method according to claim 9, wherein the mixture of gum and sweetener is granulated moist and is dried on a fluid bed.

17. A method according to claim 8, wherein the mixture of said frozen chewing gum pellets and said sugary microgranules is granulated in moistened condition and dried on a fluid bed and then tablets are prepared by compression therefrom.

18. A method according to claim 10, wherein the lubricant is selected from the group consisting of alkali-metal or alkaline-earth metal stearates, stearic acid, hydrogenated vegetable oils and other lubricants used in the preparation of tablets for pharmaceutical use, and is added in an mount of between 0.2% and 2% by weight relative to the weight of the composition.

19. A method according to claim 10, wherein microgranular cellulose and/or precipitated silica are added together with said lubricant.

20. A method according to claim 19, wherein the microgranular cellulose is added in an amount of between 0.1% and 2% by weight.

21. A method according to claim 19, wherein the precipitated silica is added in quantities of between 0.05% and 1% by weight.

22. A method according to claim 8, wherein the flavoring agent is in liquid or powder form.

23. A method according to claim 8, wherein the lacquer is sprayed in a heated vessel with hot air.

24. A chewing gum composition comprising:

a mixture of a chewing gum base and sugary microgranules; a component adsorbed onto said sugary microgranules selected from the group consisting of an additive agent and an active ingredient; and

a lacquer coating on said microgranules selected from the group consisting of pharmaceutically acceptable celluloses and polyethylene glycols.

25. Chewing gum composition according to claim 24, wherein said additive agent is a flavoring agent.

26. Chewing gum composition according to claim 24, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.

27. Chewing gum composition according to claim 24, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.

28. Chewing gum composition according to claim 24, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and

polyethylene glycol 400.

29. Chewing gum composition according to claim 24, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.

30. Chewing gum tablet according to claim 26, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood levels.

31. A method of preparing a chewing gum composition, comprising the steps of:

a) providing sugary microgranules having adsorbed onto a surface thereof a component selected from the group consisting of an additive agent and an active ingredient;

b) coating said sugary microgranules with a lacquer comprising a pharmaceutically acceptable celluloses or a polyethylene glycol in a solvent to form coated microgranules;

c) mixing said coated microgranules with frozen ground chewing gum to form a chewing gum composition.

32. A method according to claim 31, wherein said chewing gum is frozen in pellet form to a temperature of between -20.degree. C. and -25.degree. C. and ground to a particle size of between 60 and 190 mesh.

33. A method according to claim 31, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.

34. A method according to claim 31, wherein said additive agent is selected from the group consisting of a lubricant and a flavoring agent.

35. A method according to claim 31, wherein said active ingredient is in the form of microencapsulated or otherwise delayed release coated particles.

36. A method according to claim 31, wherein said solvent is selected from the group consisting of water, an alcohol, acetone, and mixtures thereof.

37. A method according to claim 33, wherein said sweetener is selected from the group consisting of sugars, polyalcohols used as sweeteners, saccharin, acesulfame, aspartame and mixtures thereof.

38. A method according to claim 37, wherein the sugar is selected from the group consisting of dextrose, glucose, sucrose, invert sugar, fructose, mannose and maltose.

39. A method according to claim 37, wherein the polyalcohols are selected from the group consisting of sorbitol, mannitol, maltitol and xylitol.

40. A method according to claim 34, wherein the lubricant is selected from the group consisting of alkali-metal or alkaline-earth metal stearates, stearic acid, hydrogenated vegetable oils and other lubricants used in the preparation of tablets for pharmaceutical use, and is added in an amount of between 0.2% and 2% by weight relative to the weight of the composition.

41. A method according to claim 34, wherein the flavoring agent is in liquid or powder form.

42. A method according to claim 31, wherein the lacquer is sprayed in a heated vessel with hot air.

43. A method according to claim 31 and further including the step of compressing the chewing gum composition to form a tablet.

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L7: Entry 1 of 2

File: USPT

DOCUMENT-IDENTIFIER: US 5711961 A

TITLE: Pharmaceutical compositions based on chewing gum and a method for the preparation thereof

Detailed Description Paragraph Table (1):

1. VITAMIN C - 1.5 g of gum containing 250 mg of Vitamin C. Gum base 0.800 g Sorbitol 0.400 g Vitamin C, 98% coated 0.250 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 2. TRICLOSAN 1.4 g of gum containing 0.010 mg of Triclosan Gum base 0.850 Sorbitol 0.410 g Triclosan 0.00001 g Aspartame 0.09999 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 3. CETYL PYRIDINIUM - 1.5 g of gum containing 1 mg of cetyl pyridinium Gum base 0.950 g Sorbitol 0.500 g Cetyl pyridinium 0.001 g Aspartame 0.010 g Flavourings 0.014 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 4. DIMENHYDRINATE - 1.5 g of gum containing 25 mg of dimenhydrinate Gum base 0.950 g Sorbitol 0.475 g Dimenhydrinate, 50% microspheres 0.036 g Dimenhydrinate, normal 0.007 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 5. CAMOMILE - 1.5 g of gum containing 250 mg of extract of camomile. Gum base 0.800 g Sorbitol 0.415 g Camomile extract 0.250 g Aspartame 0.010 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 6. ASPIRIN - 1.5 g of gum containing 300 mg of aspirin Gum base 0.750 g Sorbitol 0.400 g Aspirin 0.300 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 7. B-CAROTENE + VITAMIN E - 1.5 g of gum containing 25 mg of vitamin E and 50 mg of B-carotene Gum base 0.850 g Sorbitol 0.500 g Vitamin E, 50% coated 0.050 g .beta.-carotene 0.050 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g

CLAIMS:

1. Chewing gum tablet comprising:a mixture of a chewing gum base and sugary microgranules;a component adsorbed onto said sugary microgranules selected from the group consisting of an additive agent and an active ingredient; anda lacquer coating on the tablet selected from the group consisting of pharmaceutically acceptable celluloses and polyethylene glycols.2. Chewing gum tablet according to claim 1, wherein said additive agent is a flavoring agent.3. Chewing gum tablet according to claim 1, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.4. Chewing gum tablet according to claim 1, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.5. Chewing gum tablet according to claim 1, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and polyethylene glycol 400.6. Chewing gum tablet according to claim 1, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.

7. Chewing gum tablet according to claim 2, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood levels.

- a) freezing chewing gum in pellet form to a temperature of between -20.degree. C. and -25.degree. C. to form frozen gum;
- b) grinding said frozen gum to a particle size of between 60 and 190 mesh to form ground chewing gum;
- c) adding to said ground chewing gum sugary microgranules having adsorbed onto a surface thereof a component selected from the group consisting of an additive agent and an active ingredient to form a granular mixture;
- e) coating said tablets with a lacquer comprising a pharmaceutically acceptable celluloses or a polyethylene glycol in a solvent.

9. A method according to claim 8, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.

11. A method according to claim 10, wherein said active ingredient is added to the mixture of ground chewing gum, sweetener, lubricant and flavoring agent in the form of microencapsulated or otherwise delayed release coated particles.

17. A method according to claim 8, wherein the mixture of said frozen chewing gum pellets and said sugary microgranules is granulated in moistened condition and dried on a fluid bed and then tablets are prepared by compression therefrom.

24. A chewing gum composition comprising:

a mixture of a chewing gum base and sugary microgranules;

, a component adsorbed onto said sugary microgranules selected from the group consisting of an additive agent and an active ingredient; and

a lacquer coating on said microgranules selected from the group consisting of pharmaceutically acceptable celluloses and polyethylene glycols.

25. Chewing gum composition according to claim 24, wherein said additive agent is a flavoring agent.

26. Chewing gum composition according to claim 24, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.

27. Chewing gum composition according to claim 24, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.

28. Chewing gum composition according to claim 24, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and polyethylene glycol 400.

29. Chewing gum composition according to claim 24, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.

30. Chewing gum tablet according to claim 26, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood levels.

31. A method of preparing a chewing gum composition, comprising the steps of:

- a) providing sugary microgranules having adsorbed onto a surface thereof a component selected from the group consisting of an additive agent and an active ingredient;
- b) coating said sugary microgranules with a lacquer comprising a pharmaceutically acceptable celluloses or a polyethylene glycol in a solvent to form coated microgranules;

c) mixing said coated microgranules with frozen ground chewing gum to form a chewing gum composition.

32. A method according to claim 31, wherein said chewing gum is frozen in pellet form to a temperature of between -20.degree. C. and -25.degree. C. and ground to a particle size of between 60 and 190 mesh.

33. A method according to claim 31, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.

35. A method according to claim 31, wherein said active ingredient is in the form of microencapsulated or otherwise delayed release coated particles.

43. A method according to claim 31 and further including the step of compressing the chewing gum composition to form a tablet.

WEST

 Generate Collection

L7: Entry 1 of 2

File: USPT

Jan 27, 1998

US-PAT-NO: 5711961

DOCUMENT-IDENTIFIER: US 5711961 A

TITLE: Pharmaceutical compositions based on chewing gum and a method for the preparation thereof

DATE-ISSUED: January 27, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reiner; Alberto	Como			IT
Seneci; Alessandro	Milan			IT

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
APR Applied Pharma Research S.A.	Stabio			CH	03

APPL-NO: 08/ 619459 [PALM]

DATE FILED: May 29, 1996

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
IT	MI94A1586	July 26, 1994

PCT-DATA:

APPL-NO	DATE-FILED	PUB-NO	PUB-DATE	371-DATE	102(E)-DATE
PCT/EP95/02816	July 15, 1995	WO96/03111	Feb 8, 1996	May 29, 1996	May 29, 1996

INT-CL: [06] A61 K 9/68

US-CL-ISSUED: 424/441; 424/440, 426/5, 426/3

US-CL-CURRENT: 424/441; 424/440, 426/3, 426/5

FIELD-OF-SEARCH: 424/440, 424/441, 426/5, 426/3

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>3826847</u>	July 1974	Ogawa	426/3
<input type="checkbox"/> <u>4238510</u>	December 1980	Cherukuri et al.	426/5
<input type="checkbox"/> <u>4452821</u>	June 1984	Gergely	426/5
<input type="checkbox"/> <u>4792453</u>	December 1988	Reed	426/5
<input type="checkbox"/> <u>4929447</u>	May 1990	Yang	424/440
<input type="checkbox"/> <u>5458890</u>	October 1995	Williford	426/3

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0 551 700 A1	July 1993	EP	

ART-UNIT: 152

PRIMARY-EXAMINER: Page; Thurman K.

ASSISTANT-EXAMINER: Faulkner; D.

ABSTRACT:

Chewing gum tablets and their methods of preparation are disclosed. The gum tablets contain a mixture of chewing gum base and sugary microgranules with an additive agent and an active ingredient adsorbed onto their surface. A lacquer coating on the tablet contains cellulose and polyethylene glycols. The sugary microgranules are delayed release coated particles. The chewing gums act as vehicles for active ingredients. These active ingredients may be used alone or in combination in normal physical form in the form of coated microspheres.

43 Claims, 0 Drawing figures

WEST**End of Result Set**

L7: Entry 2 of 2

File: USPT

US-PAT-NO: 5380530

DOCUMENT-IDENTIFIER: US 5380530 A

TITLE: Oral care composition coated gum

DATE-ISSUED: January 10, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hill; Ira D.	Locust	NJ		

US-CL-CURRENT: 424/440; 424/439, 424/48, 514/900, 514/902, 514/975

CLAIMS:

What is claimed is:

1. A therapeutic preparation effective in treating localized conditions of the mouth, teeth and gums, said conditions being selected from the group consisting of plaque, gingivitis, hypersensitivity, stomatitis and microbes in the mouth, said preparation being in the form of a chewing gum wherein:

A. the chewing gum is coated with an emulsion comprising an ingestible surfactant-emulsifier and a polydimethyl siloxane insoluble in said surfactant-emulsifier,

B. the emulsion is applied to the chewing gum by means of a coating process selected from the group of coating processes consisting of printing, film coating, adhesive applications and textile dyeing, and

C. the emulsion coating on said gum is releasable during chewing, at a therapeutic effective rate and in a therapeutic effective amount.

2. The therapeutic preparation according to claim 1, wherein the emulsion coating comprises a therapeutic substance selected from the group consisting of antimicrobials, microbially active stannous fluoride,

chlorhexidine, triclosan, zinc chloride, cationic antimicrobial agents, cetylpyridinium chloride, antioxidants, propyl gallate, enzymes, antibiotics, tetracycline, mineral salts, pectin, strontium chloride, potassium nitrate, metronidazole benzocaine, analgesics for mouth and throat discomfort, sanguinarine extract, stearoyl-2-lactate, cough and cold remedies, and remineralizing substances.

3. The therapeutic preparation according to claim 1, wherein said coating releases during chewing at an effective plaque disrupting rate and in an effective plaque disrupting amount.

4. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride, releasable at an effective antigingivitis rate and in an effective antigingivitis amount.

5. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective hypersensitivity treatment rate and in an effective hypersensitivity treatment level.

6. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective stomatitis treatment rate and at an effective stomatitis treatment level.

7. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises chlorhexidine releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

8. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises triclosan releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

9. The coated chewing gum according to claim 1, wherein the ingestible surfactant is selected from the group consisting of:

sodium lauryl sulfate,
sodium lauryl sarcosinate,
polyethylene glycol stearate,
polyethylene glycol monostearate,
coconut monoglyceride sulfonates,
block copolymers of polyoxyethylene and polyoxybutylene,
alkylpolyglycol ether carboxylates,
polyethylene derivatives of sorbitan esters,
propoxylated cetyl alcohol,
block copolymers comprising a congeneric mixture of conjugated polyoxybutylene and polyoxyethylene compounds having as a hydrophobe a polyoxybutylene polymer of at least 1200 molecular weight,
a salt of a fatty acid (soap powder), and emulsified polyethylene glycols, polyethylene glycol oleate, polyethylene glycol beeswax and monomethyl ether polyethylene glycol.

10. The coated chewing gum according to claim 1, wherein the polydimethyl siloxane has the general structure:
##STR2## wherein n represents a whole number from between about 100 and 5,000, and the polydimethyl siloxane has a viscosity from between about 350 and about 12,500 centistokes.

11. A coated chewing gum according to claim 1, wherein the coating is applied to the chewing gum at from between about 0.5% and about 6% by weight of the gum, or from between about 10 mg/piece and about 100 mg/piece.

12. A coated chewing gum according to claim 9, wherein the ingestible surfactant is a polyoxyethylene-polyoxybutylene block copolymer.

13. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the

chewing gum at an elevated temperature by means of a printing process.

14. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a film coating process.

15. A chewing gum according to claim 3, wherein the plaque disrupting, melt-emulsion coating is applied to the chewing gum at an elevated temperature by means of an adhesive application process.

16. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a textile dyeing process.

17. A method of manufacturing a therapeutic chewing gum comprising, preparing a sheet of chewing gum, coating said sheet of gum with an emulsion maintained at a temperature between about 100.degree. C. and about 200.degree. C., wherein:

a. the emulsion comprises an ingestible surfactant or emulsifier and a polydimethyl siloxane insoluble in said surfactant or emulsifier, and

b. the coating process is selected from the group of coating processes consisting of printing, film making, adhesive applications and textile dyeing.

WEST**End of Result Set**

L7: Entry 2 of 2

File: USPT

Jan 10, 1995

US-PAT-NO: 5380530

DOCUMENT-IDENTIFIER: US 5380530 A

TITLE: Oral care composition coated gum

DATE-ISSUED: January 10, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hill; Ira D.	Locust	NJ		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
WhiteHill Oral Technologies	Hazlet	NJ			02

APPL-NO: 07/ 996939 [PALM]

DATE FILED: December 29, 1992

INT-CL: [06] A61 K 9/68, A23 G 3/30

US-CL-ISSUED: 424/440, 424/48, 424/439, 514/900, 514/902, 514/975

US-CL-CURRENT: 424/440; 424/439, 424/48, 514/900, 514/902, 514/975

FIELD-OF-SEARCH: 424/440, 424/48, 424/439, 424/441

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>2806814</u>	September 1957	Richter	167/93
<input type="checkbox"/> <u>4609543</u>	September 1986	Morris et al.	424/440

OTHER PUBLICATIONS

- L. Menaker, The Biologic Basis of Dental Caries, Chapter 5, Harper & Row (1980).
 L. Menaker, The Biologic Basis of Dental Caries, Chapter 11, Harper & Row (1980).
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Winter et al., Caries. Res., 16:349-352 (1982).

ART-UNIT: 152

PRIMARY-EXAMINER: Kishore; G. S.

ASSISTANT-EXAMINER: Spear; James M.

ABSTRACT:

Disclosed are several oral hygiene preparations including plaque disrupting and gingivitis control preparations in the form of chewing gums, wherein a chewing gum is coated with a plaque disrupting emulsion containing an ingestible surfactant and a polydimethyl siloxane emulsified therein, and wherein the emulsion coating can further contain a therapeutic substance such as the gingivitis control substance stannous fluoride.

17 Claims, 0 Drawing figures

WEST**End of Result Set** [Generate Collection](#) [Print](#)

L7: Entry 2 of 2

File: USPT

DOCUMENT-IDENTIFIER: US 5380530 A

TITLE: Oral care composition coated gum

Brief Summary Text (76):

A third embodiment of the invention comprises therapeutic chewing gums characterized by an emulsion coating as described earlier, wherein the emulsion coating contains a therapeutic substance such as stannous fluoride and the emulsion coating-therapeutic substance mixture is released into the oral cavity from the gum, during chewing, at a predetermined rate and in a predetermined amount. Other therapeutic substances include: oral care medicaments such as chlorhexidine, triclosan, potassium nitrate, various quaternaries, the active essential oils in Listerine.RTM., and the like, various antibiotics, analgesics, oral discomfort relief active ingredients, and the like.

Brief Summary Text (132):triclosan,Brief Summary Paragraph Table (2):

TABLE II	THERAPEUTIC
CHEWING GUMS Type of Therapeutic Substance Added to Emulsion Coating (% by weight)	Coating Mixture Abrasive for
From Table I cleaning and EXAMPLE (qs to 100%)	From Table I tartar control Antimicrobial Antibiotic Dry Mouth Oral Dicomfort
(10-30) 11 #3 stannous fluoride (1.2-4.0)	10. #1 silica dentifrice grade
12 #4 Mineral salts (saliva equiv.)	sodium fluoride (2 ppm - final)
13 #5 tetracycline (0.5-2.5)	14 #6 benzocaine (4.0-10.0)
15 #5 potassium nitrate (5.0)	16 #3 pectin (5.0-15.0)
17 #8 <u>triclosan</u> (0.2-1.0)	18 #9 Kaolin (10-30)

CLAIMS:

1. A therapeutic preparation effective in treating localized conditions of the mouth, teeth and gums, said conditions being selected from the group consisting of plaque, gingivitis, hypersensitivity, stomatitis and microbes in the mouth, said preparation being in the form of a chewing gum wherein:

A. the chewing gum is coated with an emulsion comprising an ingestible surfactant-emulsifier and a polydimethyl siloxane insoluble in said surfactant-emulsifier,

B. the emulsion is applied to the chewing gum by means of a coating process selected from the group of coating processes consisting of printing, film coating, adhesive applications and textile dyeing, and

C. the emulsion coating on said gum is releasable during chewing, at a therapeutic effective rate and in a therapeutic effective amount.

2. The therapeutic preparation according to claim 1, wherein the emulsion coating comprises a therapeutic substance selected from the group consisting of antimicrobials, microbially active stannous fluoride, chlorhexidine, triclosan, zinc chloride, cationic antimicrobial agents, cetylpyridinium chloride, antioxidants, propyl gallate, enzymes, antibiotics, tetracycline, mineral salts, pectin, strontium chloride, potassium nitrate, metronidazole benzocaine, analgesics for mouth and throat discomfort, sanguinarine extract, stearoyl-2-lactate, cough and cold remedies, and remineralizing substances.

3. The therapeutic preparation according to claim 1, wherein said coating releases during chewing at an effective plaque disrupting rate and in an effective plaque disrupting amount.

4. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous

fluoride, releasable at an effective antigingivitis rate and in an effective antigingivitis amount.

5. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective hypersensitivity treatment rate and in an effective hypersensitivity treatment level.

6. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective stomatitis treatment rate and at an effective stomatitis treatment level.

7. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises chlorhexidine releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

8. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises triclosan releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

9. The coated chewing gum according to claim 1, wherein the ingestible surfactant is selected from the group consisting of:

10. The coated chewing gum according to claim 1, wherein the polydimethyl siloxane has the general structure: ##STR2## wherein n represents a whole number from between about 100 and 5,000, and the polydimethyl siloxane has a viscosity from between about 350 and about 12,500 centistokes.

11. A coated chewing gum according to claim 1, wherein the coating is applied to the chewing gum at from between about 0.5% and about 6% by weight of the gum, or from between about 10 mg/piece and about 100 mg/piece.

12. A coated chewing gum according to claim 9, wherein the ingestible surfactant is a polyoxyethylene-polyoxybutylene block copolymer.

13. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a printing process.

14. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a film coating process.

15. A chewing gum according to claim 3, wherein the plaque disrupting, melt-emulsion coating is applied to the chewing gum at an elevated temperature by means of an adhesive application process.

16. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a textile dyeing process.

17. A method of manufacturing a therapeutic chewing gum comprising, preparing a sheet of chewing gum, coating said sheet of gum with an emulsion maintained at a temperature between about 100.degree. C. and about 200.degree. C., wherein:

b. the coating process is selected from the group of coating processes consisting of printing, film making, adhesive applications and textile dyeing.

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L3: Entry 1 of 9

File: USPT

US-PAT-NO: 6294154

DOCUMENT-IDENTIFIER: US 6294154 B1

TITLE: Oral compositions containing dimethicone copolyols

DATE-ISSUED: September 25, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hughes; Iain Allan	Egham, Surrey TW20 9NW			GB

US-CL-CURRENT: 424/49; 424/440, 424/48, 424/52

CLAIMS:

What is claimed is:

1. An oral composition in the form of a toothpaste, powder, liquid dentifrice, mouthwash, denture cleanser, chewing gum or candy comprising a lipophilic compound selected from flavorants, physiological cooling agents and antimicrobial compounds and a dimethicone copolyol selected from alkyl- and alkoxy-dimethicone copolyols having the formula (I): ##STR5##

wherein X is selected from hydrogen, alkyl, alkoxy and acyl groups having from about 1 to about 16 carbon atoms, Y is selected from alkyl and alkoxy groups having from about 8 to about 22 carbon atoms, n is from about 0 to about 200, m is from about 1 to about 40, q is from about 1 to about 100, the molecular weight of the residue (C_{sub.2} H_{sub.4} O_{sub.2}).sub.x (C_{sub.3} H_{sub.6} O_{sub.2}).sub.y X is from about 50 to about 2000, and x and y are such that the weight ratio of oxyethylene:oxypropylene is from about 100:0 to about 0:100.

2. A composition according to claim 1 wherein the dimethicone copolyol is selected from C_{sub.12} to C_{sub.20} alkyl dimethicone copolyols and mixtures thereof.

3. A composition according to claim 1 wherein the

dimethicone copolyol is cetyl dimethicone copolyol.

4. A composition according to claim 1 comprising from about 0.01% to about 25% by weight of the dimethicone copolyol.

5. A composition according to claim 4 wherein the lipophilic compound comprises a flavorant comprising one or more flavor components selected from wintergreen oil, oregano oil, bay leaf oil, peppermint oil, spearmint oil, clove oil, sage oil, sassafras oil, lemon oil, orange oil, anise oil, benzaldehyde, bitter almond oil, camphor, cedar leaf oil, marjoram oil, citronella oil, lavender oil, mustard oil, pine oil, pine needle oil, rosemary oil, thyme oil, cinnamon leaf oil, and mixtures thereof.

6. A composition according to claim 4 wherein the lipophilic compound comprises an antimicrobial compound selected from thymol, menthol, triclosan, 4-hexylresorcinol, phenol, eucalyptol, benzoic acid, benzoyl peroxide, butyl paraben, methyl paraben, propyl paraben, salicylamides, and mixtures thereof.

7. A composition according to claim 4 comprising from about 10% to about 70% by weight of a dental abrasive selected from silica, alumina, aluminosilicates, magnesium and zirconium silicates, calcium ortho-, pyro- meta- and polyphosphates, calcium and magnesium carbonates, insoluble metaphosphates and thermosetting polymerised resins.

8. A composition according to claim 4 comprising an amount of a fluoride ion source sufficient to provide from 50 ppm to 3500 ppm of fluoride ions.

9. A composition according to claim 4 comprising from about 0.1% to about 1% by weight of a binder.

10. A composition according to claim 4 comprising from about 0.1% to about 5% by weight of the dimethicone copolyol.

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L3: Entry 1 of 9

File: USPT

DOCUMENT-IDENTIFIER: US 6294154 B1

TITLE: Oral compositions containing dimethicone copolyols

Brief Summary Text (26):

Lipophilic antimicrobial compounds suitable for use herein include thymol, menthol, triclosan, 4-hexylresorcinol, phenol, eucalyptol, benzoic acid, benzoyl peroxide, butyl paraben, methyl paraben, propyl paraben, salicylamides, and mixtures thereof.

CLAIMS:

1. An oral composition in the form of a toothpaste, powder, liquid dentifrice, mouthwash, denture cleanser, chewing gum or candy comprising a lipophilic compound selected from flavorants, physiological cooling agents and antimicrobial compounds and a dimethicone copolyol selected from alkyl- and alkoxy-dimethicone copolyols having the formula (I): ##STR5##
6. A composition according to claim 4 wherein the lipophilic compound comprises an antimicrobial compound selected from thymol, menthol, triclosan, 4-hexylresorcinol, phenol, eucalyptol, benzoic acid, benzoyl peroxide, butyl paraben, methyl paraben, propyl paraben, salicylamides, and mixtures thereof.

WEST

L3: Entry 1 of 9

File: USPT

Sep 25, 2001

US-PAT-NO: 6294154

DOCUMENT-IDENTIFIER: US 6294154 B1

TITLE: Oral compositions containing dimethicone copolyols

DATE-ISSUED: September 25, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hughes; Iain Allan	Egham, Surrey TW20 9NW			GB

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Procter and Gamble Company	Cincinnati	OH			02

APPL-NO: 08/ 860058 [PALM]

DATE FILED: June 23, 1997

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
GB	9425939	December 22, 1994

PCT-DATA:

APPL-NO	DATE-FILED	PUB-NO	PUB-DATE	371-DATE	102(E)-DATE
PCT/US95/15141	November 21, 1995	WO96/19190	Jun 27, 1996	Jun 23, 1997	Jun 23, 1997

INT-CL: [07] A61 K 7/16, A61 K 7/18, A61 K 7/30, A61 K 9/68

US-CL-ISSUED: 424/49; 424/52, 424/440, 424/48

US-CL-CURRENT: 424/49; 424/440, 424/48, 424/52

FIELD-OF-SEARCH: 424/49-58

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>5607681</u>	March 1997	Galley et al.	424/405
<input type="checkbox"/> <u>5759523</u>	June 1998	Hughes et al.	424/53
<input type="checkbox"/> <u>5827505</u>	October 1998	Hughes et al.	424/49
<input type="checkbox"/> <u>5856282</u>	January 1999	Hughes	510/117
<input type="checkbox"/> <u>6004538</u>	December 1999	Hughes et al.	424/49
<input type="checkbox"/> <u>6123950</u>	September 2000	Hughes	424/401
<input type="checkbox"/> <u>6129906</u>	October 2000	Steventon	424/49

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
2 242 358 A	October 1991	GB	
96 19190A1	June 1996	WO	
96 19563A1	June 1996	WO	
96 19561A1	June 1996	WO	
96 19191A1	June 1996	WO	
96 191119A1	June 1996	WO	
96 19194A1	June 1996	WO	
96 33693A1	October 1996	WO	

ART-UNIT: 125

PRIMARY-EXAMINER: Rose; Shep K.

ABSTRACT:

An oral composition in the form of a toothpaste, powder, liquid dentifrice, mouthwash, denture cleanser, chewing gum or candy comprising a lipophilic compound selected from flavorants, physiological cooling agents and antimicrobial compounds and a dimethicone copolyol selected from alkyl- and alkoxy-dimethicone copolyols having the formula (I): ##STR1##

wherein X is selected from hydrogen, alkyl, alkoxy and acyl groups having from about 1 to about 16 carbon atoms, Y is selected from alkyl and alkoxy groups having from about 8 to about 22 carbon atoms, n is from about 0 to about 200, m is from about 1 to about 40, q is from about 1 to about 100, the molecular weight of the residue (C_{sub.2}H_{sub.4}O_{sub.2}).sub.x(C_{sub.3}H_{sub.6}O_{sub.2}).sub.yX is from about 50 to about 2000, and x and y are such that the weight ratio of oxyethylene:oxypropylene is from about 100:0 to about 0:100. The composition provides improved antiplaque and anti-bacterial activity together with enhanced substantivity, impact and/or efficacy of the lipophilic components on teeth or dentures.

10 Claims, 0 Drawing figures

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L3: Entry 3 of 9

File: USPT

US-PAT-NO: 5882631

DOCUMENT-IDENTIFIER: US 5882631 A

TITLE: Oral composition

DATE-ISSUED: March 16, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Suga; Yoshio	Osaka			JP
Ogawa; Yuka	Kyoto			JP

US-CL-CURRENT: 424/49

CLAIMS:

What is claimed is:

1. An oral composition comprising toothpaste, liquid dentifrice, or chewing gum containing porous calcium carbonate.
2. An oral composition comprising toothpaste, liquid dentifrice, or chewing gum containing porous calcium carbonate and a water-insoluble noncationic bactericide.
3. The oral composition as claimed in claim 2, wherein said water-insoluble noncationic bactericide is at least one compound selected from the group consisting of halogenated diphenyl ethers, halogenated salicylanilides, halogenated carboanilides, p-hydroxybenzoic acid esters and phenol compounds.
4. The oral composition as claimed in claim 2, wherein said water-insoluble noncationic bactericide is 2',4,4'-trichloro-2-hydroxy-diphenyl ether (triclosan).
5. The oral composition as claimed in claim 1, wherein said porous calcium carbonate has an average primary particle diameter of from 0.05 to 0.5 .mu.m, a bulk density of from 0.05 to 0.8 g/ml and a BET specific surface area of from 15 to 100 m.sup.2 /g.

6. The oral composition as claimed in claim 1, which further comprises at least one sodium carboxymethyl cellulose having an average degree of etherification of from 0.5 to 1.8.

7. The oral composition as claimed in claim 2, which further comprises at least one sodium carboxymethyl cellulose having an average degree of etherification of from 0.5 to 1.8.

8. The oral composition as claimed in claim 6, wherein the amount of said at least one sodium carboxymethyl cellulose is from 0.1 to 5 wt % based on the oral composition.

9. The oral composition as claimed in claim 7, wherein the amount of said at least one sodium carboxymethyl cellulose is from 0.1 to 5 wt % based on the oral composition.

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L3: Entry 3 of 9

File: USPT

DOCUMENT-IDENTIFIER: US 5882631 A

TITLE: Oral composition

Abstract Text (2):

Addition of porous calcium carbonate to the oral compositions makes it possible to prevent the decrease in the bactericidal activity of water-insoluble noncationic bactericides such as triclosan and improve the stability thereof while exerting excellent effects of eliminating dental plaque, preventing halitosis and eliminating tooth-staining substances. Furthermore, addition of sodium carboxymethyl cellulose to the oral compositions makes it possible to improve rheologic properties and stability with time.

Brief Summary Text (5):

Under these circumstances, studies have been made to develop oral compositions such as dentifrices containing bactericides so as to achieve supplemental effects of eliminating the dental plaque. In particular, it is known that cationic bactericides are efficacious in preventing the formation of dental plaque. However, cationic bactericides can be hardly processed into preparations due to the poor compatibility with other components in compositions. To overcome this problem, it has been recently proposed to add water-insoluble noncationic bactericides (triclosan, etc.), which are highly compatible with other components in compositions, to oral compositions.

Brief Summary Text (20):

Examples of the halogenated diphenyl ethers include 2',4,4'-trichloro-2-hydroxy-diphenyl ether (triclosan) and 2,2'-dihydroxy-5,5'-dibromo-diphenyl ether. Examples of the halogenated salicylanilides include 4',5-dibromosalicylanilide, 3,4',5-trichlorosalicylanilide, 2,3,3',5-tetrachlorosalicylanilide and 3,5-dibromo-3'-trifluoromethylsalicylanilide. Examples of the halogenated carboanilides include 3,4,4'-trichlorocarboanilide and 3-trifluoromethyl-4,4'-dichlorocarboanilide. Examples of the p-hydroxybenzoic acid esters include methyl p-hydroxybenzoate, ethyl p-hydroxybenzoate, propyl p-hydroxybenzoate and butyl p-hydroxybenzoate. Examples of the phenol compounds include isopropylmethyl phenol.

Brief Summary Text (21):

Among these water-insoluble noncationic bactericides, halogenated diphenyl ethers are preferable and triclosan (2',4,4'-trichloro-2-hydroxy-diphenyl ether) is particularly preferable therefor. In the present invention, the content of the water-insoluble noncationic bactericide may range from 0.001 to 3% by weight, preferably from 0.01 to 1% by weight, based on the whole composition. When the content of the water-insoluble noncationic bactericide is less than 0.001% by weight, sufficient bactericidal effect tends not to be achieved. When the content thereof exceeds 3% by weight, on the other hand, the resultant composition tends to become irritative to the oral mucosa, which results in a problem in practice.

Detailed Description Text (4):

Toothpastes of the following compositions were each prepared in a conventional manner and packed in a laminate tube having polyethylene at the innermost layer. After storing at 40.degree. C. for 1 month, the residual rate of triclosan and the bactericidal effect were evaluated by the methods as will be described hereinbelow.

Detailed Description Text (6):

Next, the method for measuring the residual rate of the water-insoluble noncationic bactericide will be described with the use of triclosan as an example.

Detailed Description Text (7):

(Method for measuring residual rate of triclosan)

Detailed Description Text (8):

20 ml of methanol was added to each toothpaste (2.5 g) prepared above. The resultant mixture was stirred for 20 minutes to thoroughly disperse the methanol in the toothpaste and then centrifuged at 17,000 rpm for 10 minutes to give the supernatant.

The residue was further subjected to the same treatment twice and the supernatants were combined. Then methanol was added thereto to give a total volume of 100 ml. By using the resultant mixture as a sample, triclosan was determined by liquid chromatography. The residual rate of triclosan was determined in accordance with the following formula (1) and evaluated based on the criteria given below.

Detailed Description Text (9):

Formula (1): ##EQU1## Criteria: O: Triclosan residual rate.gtoreq.90%.

Detailed Description Text (10):

x: Triclosan residual rate <90%.

Detailed Description Text (12):

To 5 ml of a 4-fold slurry of a toothpaste was added 0.1 ml of a suspension (10⁸-10⁹ CFU/ml) of *Streptococcus mutans*. After incubating at 37°C for 3 minutes, the sample solution was inoculated on a tripticase/soy/agar (TSA) plate and incubated under anaerobic conditions ($N_2/H_2/CO_2 = 85/10/5$) at 37°C for 2 days followed by the measurement of the minimum bactericidal concentration (%; hereinafter referred to simply as "MBC"). As a standard, use was made of a 0.05% aqueous solution of triclosan (solubilized with a small amount of SLS). The evaluation was made based on the following criteria.

Detailed Description Text (16):

Table 1 summarizes the data of the triclosan residual rate and the results of the bactericidal activity test.

Detailed Description Text (59):

The oral compositions prepared in the above Examples 16 to 19 show high stability with time and highly stable bactericidal activity of the water-insoluble noncationic bactericides such as triclosan. The oral compositions of Examples 16 to 23 are efficacious in eliminating dental plaque, preventing halitosis and eliminating tooth-staining substances.

Detailed Description Paragraph Table (2):

TABLE I

Example (%) Comp.

Example (%) Component 1 2 3 4 5 6 7 1 2 3

porous calcium 0.1 40.0 10.0

Porous calcium

carbonate.sup.1) : average primary particle diameter 0.2 .mu.m, bulk density 0.5 g/ml, and BET specific surface area 23 m.sup.2 Sodium carboxymethyl cellulose.sup.2) : degree of etherification 1.2

Detailed Description Paragraph Table (6):

Component Content (%)

porous calcium carbonate 30.0 (average primary particle diameter: 0.2 .mu.m, bulk density: 0.5 g/ml, BET specific surface area: 23 m.sup.2) aluminum hydroxide 5.0 sorbitol 20.0 xylitol 5.0 sodium carboxymethyl cellulose 1.5 (degree of etherification: 1.3) sodium lauryl sulfate 1.5 saccharin sodium 0.1 flavor 0.9 triclosan 0.1 purified water the balance total 100.0

Detailed Description Paragraph Table (8):

Component Content (%)

porous calcium carbonate 20.0 (average primary particle diameter: 0.1 .mu.m, bulk density: 0.2 g/ml, BET specific surface area: 60 m.sup.2) sorbitol 25.0 sodium carboxymethyl cellulose 1.5 (degree of etherification: 0.8) sodium lauryl sulfate 1.5 saccharin sodium 0.1 flavor 0.9 ethyl p-hydroxybenzoate 0.1 triclosan 0.2 sodium fluoride 0.2 polyoxyethylene (200)/polyoxy- 2.0 propylene (70) block copolymer purified water the balance total 100.0

Detailed Description Paragraph Table (9):

Component Content (%)

anhydrous silica 20.0 porous calcium carbonate 0.5 (average primary particle diameter: 0.05 .mu.m, bulk density: 0.1 g/ml, BET specific surface area: 90 m.sup.2) sorbitol 25.0 glycerin 12.0 carrageenan 1.0 sodium lauryl sulfate 1.5 sodium benzoate 0.2 saccharin sodium 0.1 flavor 0.5 triclosan 0.3 dl-alpha.-tocopherol acetate 0.5 polyoxyethylene (150)/polyoxy- 1.5 propylene (35) block copolymer sodium silicate 0.5 purified water the balance total 100.0

Detailed Description Paragraph Table (12):

Component Content (%)
porous calcium carbonate 0.5 (average primary particle diameter: 0.2 .mu.m, bulk density: 0.5 g/ml, BET specific surface area: 23 m.sup.2) precipitated calcium carbonate 30.0 sorbitol 35.0 sodium carboxymethyl cellulose 0.5 (degree of etherification: 1.8) sodium lauryl sulfate 1.5 saccharin sodium 0.1 POE (200)/POP (40) 1.0 block copolymer flavor 0.9 <u>triclosan</u> 0.1 purified water the balance total 100.0

Detailed Description Paragraph Table (13):

Component Content (%)
porous calcium carbonate 5.0 (average primary particle diameter: 0.2 .mu.m, bulk density: 0.5 g/ml, BET specific surface area: 23 m.sup.2) heavy calcium phosphate 30.0 sorbitol 35.0 sodium carboxymethyl cellulose 0.5 (degree of etherification: 1.8) sodium carboxymethyl cellulose 0.3 (degree of etherification: 0.6) sodium lauryl sulfate 1.5 saccharin sodium 0.1 POE (200)/POP (40) 1.0 block copolymer flavor 0.9 <u>triclosan</u> 0.1 purified water the balance total 100.0

CLAIMS:

1. An oral composition comprising toothpaste, liquid dentifrice, or chewing gum containing porous calcium carbonate.
2. An oral composition comprising toothpaste, liquid dentifrice, or chewing gum containing porous calcium carbonate and a water-insoluble noncationic bactericide.
4. The oral composition as claimed in claim 2, wherein said water-insoluble noncationic bactericide is 2',4,4'-trichloro-2-hydroxy-diphenyl ether (triclosan).

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L3: Entry 3 of 9

File: USPT

Mar 16, 1999

US-PAT-NO: 5882631

DOCUMENT-IDENTIFIER: US 5882631 A

TITLE: Oral composition

DATE-ISSUED: March 16, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Suga; Yoshio	Osaka			JP
Ogawa; Yuka	Kyoto			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Sunstar Inc.	Osaka			JP	03

APPL-NO: / 065609 [PALM]

DATE FILED: April 24, 1998

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COUNTRY	APPL-NO	APPL-DATE
JP	9-123403	April 24, 1997
JP	9-161807	June 3, 1997
JP	10-063971	February 27, 1998

INT-CL: [06] A61 K 7/16

US-CL-ISSUED: 424/49

US-CL-CURRENT: 424/49

FIELD-OF-SEARCH: 424/49-58

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>4976736</u>	December 1990	White et al.	623/16
<input type="checkbox"/> <u>5084051</u>	January 1992	Turmala et al.	606/77
<input type="checkbox"/> <u>5292495</u>	March 1994	Nakajima et al.	423/432
<input type="checkbox"/> <u>5302396</u>	April 1994	Phadke et al.	424/465
<input type="checkbox"/> <u>5437873</u>	August 1995	Phadke et al.	424/465
<input type="checkbox"/> <u>5480827</u>	January 1996	Guillemin et al.	435/240.23
<input type="checkbox"/> <u>5711957</u>	January 1998	Patat et al.	424/422

ART-UNIT: 164

PRIMARY-EXAMINER: Rose; Shep K.

ABSTRACT:

Oral compositions containing a water-insoluble noncationic bactericide showing improved stability with time and improved rheologic properties, and exerting excellent effects of eliminating dental plaque, preventing halitosis and eliminating tooth-staining substances.

Addition of porous calcium carbonate to the oral compositions makes it possible to prevent the decrease in the bactericidal activity of water-insoluble noncationic bactericides such as triclosan and improve the stability thereof while exerting excellent effects of eliminating dental plaque, preventing halitosis and eliminating tooth-staining substances. Furthermore, addition of sodium carboxymethyl cellulose to the oral compositions makes it possible to improve rheologic properties and stability with time.

9 Claims, 0 Drawing figures

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L3: Entry 6 of 9

File: USPT

US-PAT-NO: 5670138

DOCUMENT-IDENTIFIER: US 5670138 A

TITLE: Mouth-care products

DATE-ISSUED: September 23, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Venema; Franciscus Ties	Voorthuizen			NL
Timmer; Christien Jannie	Amersfoort			NL
Douma; Jolanda	Amersfoort			NL
Jochems; Stephanus Aloysius Gerardus	Amersfoort			NL

US-CL-CURRENT: 424/52; 424/435, 424/44, 424/440, 424/49

CLAIMS:

We claim:

1. A mouth care product in the form of a tooth paste, a tooth cream, a dental gel, a tooth powder, a mouth-wash, a chewing gum, a concentrate, a dental tablet, a chewing tablet, a lozenge, or an effervescent table, the mouth care product comprising:

an amount of at least one copolymer of N-vinylpyrrolidone and acrylic acid, in a weight ratio of 60-95 to 40-5; and

an abrasive agent, a polishing agent, a thickening agent, a colouring agent, a sweetening agent, a flavouring agent, a foaming agents, another active component, or a combination thereof.

2. A mouth care product according to claim 1, wherein the weight ratio of the at least one copolymer of N-vinylpyrrolidone and acrylic acid is in the range of about 65:35 to 95:5.

3. A mouth care product according to claim 1, wherein the amount of said copolymer is between 0.01% and 5% by weight of the product.

4. A mouth care product according to claim 2, wherein the amount of said copolymer is between 0.01% and 3% by weight of the product.

5. A mouth care product according to claim 1 in the form of a concentrate or a tablet, wherein the amount of said copolymer is between 2 and 50 wt. % of the said concentrate or tablet.

6. A mouth care product according to claim 1, further comprising a bactericidal component.

7. A mouth care product according to claim 6, wherein the bactericidal component is a lantibiotic, triclosan, hexachlorophene, bromochlorophene, or nisin.

8. A mouth care product according to claim 6, wherein the bactericidal component is present in the product ready for use in an amount between 0.1 and 10,000 ppm.

9. A mouth care product according to claim 1, further comprising a fluoride source.

10. A mouth care product according to claim 9, wherein the fluoride source is alkali metal fluoride, monofluorophosphate, or tin (II) fluoride.

11. A mouth care product according to claim 9 wherein the fluoride source is present in an amount sufficient to release 30 to 2,000 ppm of fluoride ion in the product ready for use.

12. A mouth care product according to claim 9, further comprising a bactericidal compound.

13. A mouth care product according to claim 12, wherein the bactericidal compound is nisin.

14. A method for preparing a mouth care product in the form of a tooth paste, a tooth cream, a dental gel, a tooth powder, a mouth-wash, a chewing gum, a concentrate, a dental tablet, a chewing tablet, a lozenge, or an effervescent table, the method comprising:

incorporating into the mouth care product a copolymer of

N-vinylpyrrolidone and acrylic acid, in a weight ratio of 60-95 to 40-5.

15. A method for improving the bioadhesion of a bactericidal compound in a mouth care product, the method comprising:

incorporating into the mouth care product a copolymer of N-vinylpyrrolidone and acrylic acid, in a weight ratio of 60-95 to 40-5;

wherein the mouth care product is in the form of a tooth paste, a tooth cream, a dental gel, a tooth powder, a mouth-wash, a chewing gum, a concentrate, a dental tablet, a chewing tablet, a lozenge, or an effervescent table.

16. A method for reducing occurrence of caries, gingivitis, or other periodontal disease, the method comprising:

applying orally a mouth-care product comprising a copolymer of N-vinylpyrrolidone and acrylic acid, in a weight ratio of 60-95 to 40-5;

wherein the mouth care product is in the form of a tooth paste, a tooth cream, a dental gel, a tooth powder, a mouth-wash, a chewing gum, a concentrate, a dental tablet, a chewing tablet, a lozenge, or an effervescent table.

17. A method according to claim 16, wherein the mouth care product further comprises an effective amount of at least one lantibiotic, an effective amount of at least one compound providing fluoride ions, or a combination thereof.

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L3: Entry 7 of 9

File: USPT

US-PAT-NO: 5651959

DOCUMENT-IDENTIFIER: US 5651959 A

TITLE: Ultramulsion based oral care compositions

DATE-ISSUED: July 29, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hill; Ira D.	Locust	NJ		
Walters; Peter P.	Neshanic	NJ		
Brown; Dale G.	Wharton	TX		

US-CL-CURRENT: 424/49; 132/321, 132/323, 424/401, 433/216, 433/217.1

CLAIMS:

What is claimed is:

1. An oral care composition selected from the group consisting of rinses, sprays, gels, creams, toothpastes, tooth powders, dental floss, interproximal simulators, mints and chewing gum, wherein said composition contains an aqueous-free high shear or ULTRAMULSION.TM. dispersion, formed by heating a mixture of surfactant and silicone, followed by high shear mixing wherein:
 - a. the silicone is insoluble in said surfactant, has a viscosity greater than about 100,000 cs, and a particle size up to about 10 microns;
 - b. the surfactant to silicone ratio in the ULTRAMULSION dispersion is from between about 400:1 and about 1:1; and the surfactant has an orienting effect on the silicone,
 - c. the ULTRAMULSION dispersion forms stable dispersions in aqueous containing oral care compositions, and
 - d. said oral care composition exhibits enhanced substantivity to surfaces in the oral cavity while the dispersed silicone phase of said ULTRAMULSION dispersion functions as a reservoir for one or more lipid soluble

and lipid dispersible oral care active ingredients.

2. An oral care composition according to claim 1, wherein said ULTRAMULSION dispersion comprises a nonionic poloxamer surfactant and polydimethylsiloxane wherein:

a. said polydimethylsiloxane has the chemical composition $(CH_{\cdot}sub{\cdot}3)_{\cdot}sub{\cdot}3 SiO[SiO(CH_{\cdot}sub{\cdot}3)_{\cdot}sub{\cdot}2]_{\cdot}sub{\cdot}n Si(CH_{\cdot}sub{\cdot}3)_{\cdot}sub{\cdot}3$, wherein n is a whole number;

b. said surfactant has the chemical composition ##STR5## wherein x, y, and x' are whole numbers; c. the viscosity of the polydimethylsiloxane ranges from between about 2.5 million and about 50 million cs;

d. the particle size of most of the polydimethylsiloxane in the ULTRAMULSION dispersion is from between about 0.1 and about 10 microns;

e. from between about 80% and 95% of said polydimethylsiloxane particles in the ULTRAMULSION dispersion are from between about 1 and about 10 microns;

f. the nonionic surfactant is a polyoxyethylene-polyoxypropylene block copolymer having a molecular weight from between about 1,100 and about 150,000;

g. the ratio of surfactant to polydimethylsiloxane is from between about 400:1 and about 1:2; and

h. the ULTRAMULSION dispersion dispersed in water based oral care composition is stable.

3. A method of manufacturing ULTRAMULSION.TM. dispersions suitable for oral care compositions said method comprising, heating said surfactant and silicone mixture in a heated, stirred vessel substantially free from water, followed by subjecting said mixture to high shear dispersion; wherein;

a. the silicone is insoluble in said surfactant, has a viscosity ranging from about 100,000 cs up to about 50 million cs, and a particle size up to about 10 microns,

b. the surfactant to silicone ratio in the high shear

dispersion is from between about 400:1 and about 1:1; and the surfactant has an orienting effect on the silicone,

c. the silicone is oriented, exhibits enhanced substantivity to surfaces in the oral cavity and functions as a reservoir for one or more lipid soluble and lipid dispersible hair care active ingredients.

4. A method according to claim 3, wherein the heated vessel is provided with an inert head of gas.

5. A method according to claim 3, wherein said high shear dispersing means is fitted with a small orifice.

6. A method according to claim 3 wherein said high shear dispersing means is an ultrasonication means.

7. A stable aqueous based oral care composition containing a dispersed therein an ULTRAMULSION dispersion comprising a nonionic poloxamer surfactant and a polydimethylsiloxane insoluble in said surfactant wherein:

a. said polydimethylsiloxane has the chemical composition $(CH_{sub.3})_{sub.3}SiO[SiO(CH_{sub.3})_{sub.2}]_{sub.n}Si(CH_{sub.3})_{sub.3}$, wherein n is a whole number;

b. said surfactant has the chemical composition ##STR6## wherein x, y, and x' are whole numbers; c. the viscosity of the polydimethylsiloxane ranges from between about 2.5 million and about 50 million cs;

d. the particle size of most of the polydimethylsiloxane in the ULTRAMULSION dispersion is from between about 0.1 and about 10 microns;

e. from between about 80% and 95% of said polydimethylsiloxane particles in the ULTRAMULSION dispersions are from between about 1 and about 10 microns;

f. the nonionic surfactant is a polyoxyethylene-polyoxypropylene block copolymer having a molecular weight from between about 1,100 and about 150,000;

g. the ratio of surfactant to polydimethylsiloxane is from between about 400:1 and about 1:2; and

h. the ULTRAMULSION dispersion dispersed in water is stable.

8. An oral care composition according to claim 7, wherein the ratio of said surfactant to said silicone is 9:1 and 90% of the silicone particles are from between about 1 and 3 microns.

9. An oral care composition according to claim 7, wherein the ratio of said surfactant to said silicone is 2:1 and 100% of the silicone dispersion is less than 10 microns.

10. An oral care composition according to claim 7, wherein the ratio of said surfactant to said silicone is 1:1 and the silicone particles in said ULTRAMULSION dispersion are less than 10 microns.

11. An aqueous based rinse composition containing an ULTRAMULSION dispersion comprising a nonionic poloxamer surfactant and polydimethylsiloxane insoluble in said surfactant wherein:

a. said polydimethylsiloxane has the chemical composition $(CH_{sub.3})_{sub.3} SiO[SiO(CH_{sub.3})_{sub.2}]_{sub.n} Si(CH_{sub.3})_{sub.3}$, wherein n is a whole number;

b. said surfactant has the chemical composition ##STR7## wherein x, y, and x' are whole numbers; c. the viscosity of the polydimethylsiloxane ranges from between about 100,000 and about 4 million cs;

d. the particle size of most of the polydimethylsiloxane in the ULTRAMULSION dispersion is from between about 0.1 and about 10 microns;

e. from between about 80% and 95% of said polydimethylsiloxane particles in the ULTRAMULSION dispersion are from between about 1 and about 10 microns;

f. the nonionic surfactant is a polyoxyethylene-polyoxypropylene block copolymer having a molecular weight from between about 1,100 and about 150,000;

- g. the ratio of surfactant to polydimethylsiloxane is from between about 400:1 and about 1:2;
 - h. the ULTRAMULSION dispersion dispersed in water based rinse is stable, and
 - i. the polydimethylsiloxane contains one or more essential oil active ingredients.
12. An oral care composition according to claim 7, wherein the silicone is a polydimethylsiloxane uncoiled and oriented wherein the oxygen moieties are generally oriented in a plane distinct from that of the methyl/moieties.
13. An oral care composition according to claim 1, wherein the surfactant is selected from the group consisting of, flowable liquids of varying viscosities, pastes, prills and cast solids.
14. A method according to claim 3, wherein the high shear dispersion is achieved with high shear dispersing means selected from the group consisting of superfine dispersion means and ultrasonic dispersion means.
15. An oral care composition according to claim 7, wherein the ratio of surfactant to polydimethylsiloxane is 1:1 and at least 80% of the polydimethylsiloxane dispersed particles are between 1 and 9 microns.
16. An oral care composition according to claim 1, wherein the ratio or surfactant to polydimethylsiloxane is 9:1 and about 90% of the polydimethylsiloxane dispersed particles are between 1 and 3 microns.
17. An oral care composition according to claim 1, wherein the ratio or surfactant to polydimethylsiloxane is 2:1 and about 90% of the polydimethylsiloxane dispersed particles are between 1 and 3 microns.
18. An oral care composition according to claim 7, wherein the ratio of surfactant to polydimethylsiloxane is 4:1 and about 90% of the polydimethylsiloxane dispersed particles are between 1 and 9 microns.

19. An oral care composition according to claim 7, wherein the ratio of surfactant to polydimethylsiloxane is 9.5:0.5 and about 100% of the polydimethylsiloxane dispersed particles are between 1 and 9 microns.

20. An oral care composition according to claim 7, wherein the polydimethylsiloxane has a viscosity of 2.5 million cs and the surfactant is a solid at room temperature.

21. An oral care composition according to claim 1, wherein the silicone contains an active ingredient selected from the group consisting of, anti-plaque, anti-tartar, anti-gingivitis and anti-periodontitis active ingredients.

22. An oral care composition according to claim 21, wherein the silicone contains triclosan.

23. An oral care composition according to claim 21, wherein the silicone contains a mixture of essential oils selected from the group consisting of thymol, eucalyptol, menthol and methyl salicylate.

24. An oral care composition according to claim 21, wherein the silicone contains stannous fluoride.

25. An oral care composition according to claim 21, wherein the silicone contains chlorhexidine.

26. An oral care composition according to claim 21, wherein the silicone contains metronidazole.

27. An oral care composition according to claim 1, wherein the composition is a gel for treating periodontal pockets.

28. An oral care composition according to claim 1, wherein the composition is a toothpaste containing triclosan in said silicone.

29. An oral care composition according to claim 1, wherein the composition is a dental floss where the silicone contains one or more antimicrobials selected from the group consisting of stannous fluoride, triclosan, chlorhexidine and metronidazole.

30. An oral care composition according to claim 1,
wherein the composition is a gel and the silicone
contains benzocaine.

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L3: Entry 8 of 9

File: USPT

US-PAT-NO: 5380530

DOCUMENT-IDENTIFIER: US 5380530 A

TITLE: Oral care composition coated gum

DATE-ISSUED: January 10, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hill; Ira D.	Locust	NJ		

US-CL-CURRENT: 424/440; 424/439, 424/48, 514/900, 514/902, 514/975

CLAIMS:

What is claimed is:

1. A therapeutic preparation effective in treating localized conditions of the mouth, teeth and gums, said conditions being selected from the group consisting of plaque, gingivitis, hypersensitivity, stomatitis and microbes in the mouth, said preparation being in the form of a chewing gum wherein:
 - A. the chewing gum is coated with an emulsion comprising an ingestible surfactant-emulsifier and a polydimethyl siloxane insoluble in said surfactant-emulsifier,
 - B. the emulsion is applied to the chewing gum by means of a coating process selected from the group of coating processes consisting of printing, film coating, adhesive applications and textile dyeing, and
 - C. the emulsion coating on said gum is releasable during chewing, at a therapeutic effective rate and in a therapeutic effective amount.
2. The therapeutic preparation according to claim 1, wherein the emulsion coating comprises a therapeutic substance selected from the group consisting of antimicrobials, microbially active stannous fluoride, chlorhexidine, triclosan, zinc chloride, cationic

antimicrobial agents, cetylpyridinium chloride, antioxidants, propyl gallate, enzymes, antibiotics, tetracycline, mineral salts, pectin, strontium chloride, potassium nitrate, metronidazole benzocaine, analgesics for mouth and throat discomfort, sanguinarine extract, stearoyl-2-lactate, cough and cold remedies, and remineralizing substances.

3. The therapeutic preparation according to claim 1, wherein said coating releases during chewing at an effective plaque disrupting rate and in an effective plaque disrupting amount.

4. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride, releasable at an effective ant gingivitis rate and in an effective ant gingivitis amount.

5. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective hypersensitivity treatment rate and in an effective hypersensitivity treatment level.

6. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective stomatitis treatment rate and at an effective stomatitis treatment level.

7. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises chlorhexidine releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

8. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises triclosan releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

9. The coated chewing gum according to claim 1, wherein the ingestible surfactant is selected from the group consisting of:

sodium lauryl sulfate,

sodium lauryl sarcosinate,
polyethylene glycol stearate,
polyethylene glycol monostearate,
coconut monoglyceride sulfonates,
block copolymers of polyoxyethylene and polyoxybutylene,
alkylpolyglycol ether carboxylates,
polyethylene derivatives of sorbitan esters,
propoxylated cetyl alcohol,
block copolymers comprising a congeneric mixture of
conjugated polyoxybutylene and polyoxyethylene compounds
having as a hydrophobe a polyoxybutylene polymer of at
least 1200 molecular weight,
a salt of a fatty acid (soap powder), and emulsified
polyethylene glycols, polyethylene glycol oleate,
polyethylene glycol beeswax and monomethyl ether
polyethylene glycol.

10. The coated chewing gum according to claim 1, wherein
the polydimethyl siloxane has the general structure:
##STR2## wherein n represents a whole number from between
about 100 and 5,000, and the polydimethyl siloxane has a
viscosity from between about 350 and about 12,500
centistokes.

11. A coated chewing gum according to claim 1, wherein
the coating is applied to the chewing gum at from between
about 0.5% and about 6% by weight of the gum, or from
between about 10 mg/piece and about 100 mg/piece.

12. A coated chewing gum according to claim 9, wherein
the ingestible surfactant is a
polyoxyethylene-polyoxybutylene block copolymer.

13. A chewing gum according to claim 3, wherein the
plaque disrupting, emulsion coating is applied to the
chewing gum at an elevated temperature by means of a

printing process.

14. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a film coating process.

15. A chewing gum according to claim 3, wherein the plaque disrupting, melt-emulsion coating is applied to the chewing gum at an elevated temperature by means of an adhesive application process.

16. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a textile dyeing process.

17. A method of manufacturing a therapeutic chewing gum comprising, preparing a sheet of chewing gum, coating said sheet of gum with an emulsion maintained at a temperature between about 100.degree. C. and about 200.degree. C., wherein:

a. the emulsion comprises an ingestible surfactant or emulsifier and a polydimethyl siloxane insoluble in said surfactant or emulsifier, and

b. the coating process is selected from the group of coating processes consisting of printing, film making, adhesive applications and textile dyeing.

WEST**End of Result Set**

L3: Entry 9 of 9

File: USPT

US-PAT-NO: 5348733

DOCUMENT-IDENTIFIER: US 5348733 A

TITLE: Oral composition

DATE-ISSUED: September 20, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Morishima; Seiji	Odawara			JP
Oka; Miwako	Yokohama			JP
Yoji; Yamazaki	Hiratsuka			JP

US-CL-CURRENT: 424/52; 424/49

CLAIMS:

We claim:

1. An oral composition consisting essentially of:

0.001 to 1.0% by weight of the total weight of the oral composition of triclosan;

0.01 to 10% by weight of the total weight of the oral composition of an alkyl sulfate;

0.01 to 10% by weight of the total weight of the oral composition of a water-soluble tin salt selected from the group consisting of stannous fluoride, stannous chloride, stannous fluoride chloride, stannous acetate, stannous sulfate, stannous tartrate, stannous gluconate and stannous citrate; and

one or more optional effective ingredients in an amount not impeding the germicidal effect of triclosan selected from the group consisting of abrasives, binders, humectants and flavors.

2. The oral composition according to claim 1, wherein the alkyl sulfate has 8 to 18 carbon atoms in the alkyl

group.

3. The oral composition according to claim 1, wherein said composition is in the form of a member selected from the group consisting of toothpaste, toothpowder, mouthwash, gingiva-massage cream, ointment, troche, and chewing gum.

4. The oral composition according to claim 1, wherein the triclosan is present in an amount of from 0.01 to 0.05% by weight of the total weight of the oral composition,

the alkyl sulfate is present in the amount of from 0.1 to 5% by weight of the total weight of the oral composition, and

the water-soluble tin salt is present in the amount of 0.1 to 2% by weight of the total weight of the oral composition.

5. The oral composition according to claim 1, wherein the alkyl sulfate has 10 to 14 carbon atoms in the alkyl group.

6. The oral composition according to claim 1, wherein the alkyl sulfate is selected from the group consisting of sodium lauryl sulfate and sodium myristyl sulfate.

7. The oral composition according to claim 1, wherein the water-soluble tin salt is selected from the group consisting of stannous fluoride, stannous chloride and stannous gluconate.

8. The oral composition according to claim 1, wherein the pH is from 5 to 6.5.

9. The oral composition according to claim 1, wherein the alkyl sulfate is sodium lauryl sulfate and the water-soluble tin salt is stannous fluoride.

10. The oral composition according to claim 1, wherein the water-soluble tin salt is stannous fluoride and the oral composition is in the form of a toothpaste.

WEST

L2: Entry 2 of 33

File: USPT

US-PAT-NO: 6365130

DOCUMENT-IDENTIFIER: US 6365130 B1

TITLE: Antimicrobial chewing gum

DATE-ISSUED: April 2, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Barry; John E.	Derry	NH		
Trogolo; Jeffrey A.	Boston	MA		

US-CL-CURRENT: 424/48; 424/405, 424/618, 424/641, 424/649

CLAIMS:

What is claimed is:

1. An antimicrobial chewing gum comprising:

(a) a chewing gum base and

(b) antimicrobial inorganic ceramic particles comprising ion-exchanged antimicrobial metal cations

wherein the antimicrobial inorganic ceramic particles are present in an amount of from about 0.05 to 50 weight percent, based on the weight of the chewing gum composition, and are capable of releasing the antimicrobial metal cations in an antimicrobially effective amount.

2. A chewing gum of claim 1 wherein the antimicrobial metal ions are present in an amount from about 0.1 to 15 weight percent of the ceramic particles.

3. A chewing gum of claim 1 wherein the antimicrobial metal ions are selected from silver, copper and zinc.

4. A chewing gum of claim 1 wherein the gum achieves antimicrobial action during chewing.

5. The chewing gum according to claim 1 wherein said inorganic ceramic particles are dispersed in said chewing gum and are present in the amount of from 0.05 to 50 weight percent and an average particle size of from at 0.2 to 40 .mu.m.

6. The antimicrobial chewing gum of claim 1 wherein the antimicrobial ceramic particles are selected from the group consisting of zeolites, hydroxy apatite and zirconium phosphates.

7. The antimicrobial chewing gum of claim 1 wherein the antimicrobial metal cations are silver cations.

8. The antimicrobial chewing gum of claim 1 wherein the release rate of the antimicrobial metal cations is about 2,500 parts per million per minute while being chewed.

9. An antimicrobial chewing gum comprising:

(a) a chewing gum base and

(b) antimicrobial zeolite particles comprising ion-exchanged antimicrobial metal cations

wherein the antimicrobial zeolite particles are present in an amount of from about 0.05 to 50 weight percent, based on the weight of the chewing gum composition, and are capable of releasing the antimicrobial metal cations in an antimicrobially effective amount.

10. A chewing gum of claim 9 wherein the ion-exchanged zeolite is present in an amount of from about 0.1 to 25 weight percent.

11. The antimicrobial chewing gum of claim 9 wherein the antimicrobial metal ions are selected from the group consisting of gold, silver, copper and zinc ions.

12. The antimicrobial chewing gum of claim 9 wherein the antimicrobial metal cations are silver cations.

13. The antimicrobial chewing gum of claim 9 wherein the release rate of the antimicrobial metal cations is about 2,500 parts per million per minute while being chewed.

14. A method for killing, reducing, or inhibiting growth of oral microbes comprising the step of masticating a chewing gum according to claim 1.

15. A method for killing, reducing, or inhibiting growth of oral microbes comprising the step of masticating a chewing gum according to claim 1, wherein the inorganic ceramic particles are zeolite particles.

16. A method for killing, reducing, or inhibiting growth of oral microbes comprising the step of masticating a chewing gum according to claim 1, wherein the metal ions are selected from silver, copper, and zinc.

17. A method for killing, reducing, or inhibiting growth of oral microbes comprising the step of masticating a chewing gum of claim 1, wherein the release rate of antimicrobial metal ions is about 2,500 parts per million per minute.

18. A method for killing, reducing or inhibiting growth of oral microbes comprising the step of masticating an antimicrobial chewing gum comprising:

(a) a chewing gum base and

(b) antimicrobial inorganic ceramic particles comprising ion-exchanged antimicrobial metal cations

wherein the antimicrobial zeolite particles are present in an amount of from about 0.05 to 50 weight percent, based on the weight of the chewing gum composition, and are capable of releasing the antimicrobial metal cations in an antimicrobially effective amount for a sufficient period of time to allow for the release of an antimicrobially effective amount of the antimicrobial metal cations.

19. The method of claim 18 wherein the inorganic ceramic particles are zeolite particles ion exchanged with antimicrobial metal ions selected from the group consisting of silver, copper and zinc cations.

20. The method of claim 18 wherein the inorganic ceramic particles are ion-exchanged silver zeolite particles.

21. The method of claim 18 wherein the method results in the reduction of dental caries on teeth, a reduction in the incidence of gingivitis or the reduction in the formation of plaque on teeth.

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L2: Entry 3 of 33

File: USPT

US-PAT-NO: 6355229

DOCUMENT-IDENTIFIER: US 6355229 B1

TITLE: Oral composition containing cetylpyridinium chloride and guar hydroxypropyltrimonium chloride and method of using the same

DATE-ISSUED: March 12, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Adamy; Steven T.	Hamilton	NJ		

US-CL-CURRENT: 424/54; 424/435, 424/440, 424/464, 424/48, 424/49

CLAIMS:

What is claimed is:

1. An oral composition comprising:
 - a) an antibacterial effective amount of cetylpyridinium chloride;
 - b) an effective amount of guar hydroxypropyltrimonium chloride, sufficient to bind to compounds which undesirably bind to cetylpyridinium chloride thereby enabling the cetylpyridinium chloride to effectively bind to tooth surfaces and perform an antibacterial function; and
 - c) an orally acceptable carrier.
2. The oral composition of claim 1, wherein the orally acceptable carrier is selected from the group consisting of water, saline, alcohol, glycerin, oil and mixtures thereof.
3. The oral composition of claim 1, wherein the oral composition is in a form selected from the group consisting of a mouthwash, a dentifrice, a chewing gum, and a lozenge.

4. The oral composition of claim 1, the amount of cetylpyridinium chloride is present from about 0.01 to 1.0% by weight based on the total weight of the oral composition.
5. The oral composition of claim 1, wherein the amount of guar hydroxypropyltrimonium chloride is present from about 0.1 to 3.0% by weight based on the total weight of the oral composition.
6. The oral composition of claim 3 wherein the dentifrice is a toothpaste.
7. The oral composition of claim 6 further comprising at least one material selected from the group consisting of thickening agents, whiteners, flavorants, humectants, desensitizing agents, abrasive agents, alkali metal bicarbonate salts, and fluoride supplying compounds.
8. The oral composition of claim 7 wherein the abrasive agents are selected from the group consisting of sodium metaphosphate, potassium metaphosphate, tricalcium phosphate, dicalcium phosphate dihydrate, anhydrous dicalcium phosphate, calcium pyrophosphate, zinc orthophosphate, alumina, hydrated alumina, aluminum silicate, bentonite, calcium carbonate, and sodium bicarbonate.
9. The oral composition of claim 1 further comprising at least one sweetening agent.
10. The oral composition of claim 9 comprising at least one high potency sweetening agent.
11. The oral composition of claim 1 further comprising at least one additional antibacterial agent.
12. The oral composition of claim 11 wherein the at least one additional antibacterial agent is present in an amount of from about 0.1 to 2% by weight based on the total weight of the oral composition.
13. The oral composition of claim 7 wherein the abrasive agent is present in an amount of from about 0.5 to 70% by weight.

14. The oral composition of claim 7 wherein the fluoride supplying compound is present in an amount sufficient to deliver from about 100 to 5,000 ppm of available fluoride based on the composition.

15. The oral composition of claim 7 wherein the alkali metal bicarbonate salts are present in an amount of up to about 75% by weight based on the total weight of the oral composition.

16. The oral composition of claim 15 wherein the amount of the alkali metal bicarbonate salts are present in an amount of from about 5 to 40% by weight.

17. The oral composition of claim 7 wherein the thickening agent is present in an amount of from about 0.1 to 3.0% by weight based on the total weight of the composition.

18. The oral composition of claim 1 wherein the orally acceptable carrier is present in an amount of from about 20 to 99% by weight based on the total weight of the composition.

19. The oral composition of claim 7 wherein the humectant is present in an amount of from about 1 to 50% by weight based on the total weight of the composition.

20. A method of reducing the presence of microorganisms in an oral cavity of a warm-blooded animal, said method comprising administering to the oral cavity an effective amount of the oral composition of claim 1.

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L2: Entry 3 of 33

File: USPT

DOCUMENT-IDENTIFIER: US 6355229 B1

TITLE: Oral composition containing cetylpyridinium chloride and guar hydroxypropyltrimonium chloride and method of using the same

Brief Summary Text (36):

Antibacterial agents other than cetylpyridinium chloride may be optionally present in the oral compositions of the present invention. Such agents may include, but not limited to, chlorhexidine gluconate; benzalkonium chloride; benzethonium chloride; domiphen bromide; zinc salts such as zinc chloride, citrate or gluconate; stannous salts such as stannous chloride and fluoride; triclosan; sanguinarine chloride; and essential oils such as eucalyptol, thymol, menthol and eugenol. If present, the additional antibacterial agents generally comprise up to about 2% by weight, preferably from about 0.1 to 2% by weight of the composition of the present invention.

CLAIMS:

3. The oral composition of claim 1, wherein the oral composition is in a form selected from the group consisting of a mouthwash, a dentifrice, a chewing gum, and a lozenge.

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Term	Documents
(4 AND 8).USPT,JPAB,EPAB,DWPI,TDBD.	10
(L4 AND L8).USPT,JPAB,EPAB,DWPI,TDBD.	10

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Search History**DATE:** Monday, August 19, 2002 [Printable Copy](#) [Create Case](#)**Set Name Query**

side by side

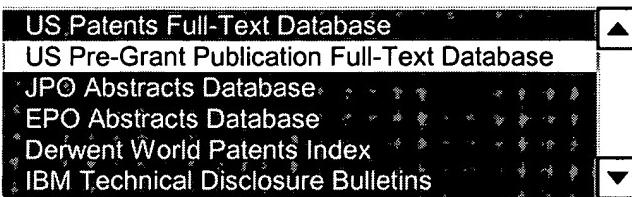
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<u>L11</u>	14 and triclosan	3	<u>L11</u>
<u>L10</u>	19 and triclosan	22	<u>L10</u>
<u>L9</u>	18 and 11	50	<u>L9</u>
<u>L8</u>	(cetylpyridinium or cetyl pyridinium)	4319	<u>L8</u>
<u>L7</u>	16 and triclosan	2	<u>L7</u>
<u>L6</u>	14 and active.clm.	18	<u>L6</u>
<u>L5</u>	12 and 14	3	<u>L5</u>
<u>L4</u>	11 and coating.clm.	138	<u>L4</u>
<u>L3</u>	12 and triclosan.clm.	9	<u>L3</u>
<u>L2</u>	11 and triclosan	33	<u>L2</u>
<u>L1</u>	chewing gum.clm.	1007	<u>L1</u>

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Term	Documents
TRICLOSAN,DWPI,TDBD,EPAB,JPAB,USPT.	1644
(12 AND TRICLOSAN).USPT,JPAB,EPAB,DWPI,TDBD.	2
(L12 AND TRICLOSAN).USPT,JPAB,EPAB,DWPI,TDBD.	2

Database:**Search:**

L14

Refine Search

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Clear

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<u>L11</u>	14 and triclosan	3	<u>L11</u>
<u>L10</u>	19 and triclosan	22	<u>L10</u>
<u>L9</u>	18 and 11	50	<u>L9</u>
<u>L8</u>	(cetylpyridinium or cetyl pyridinium)	4319	<u>L8</u>
<u>L7</u>	16 and triclosan	2	<u>L7</u>
<u>L6</u>	14 and active.clm.	18	<u>L6</u>
<u>L5</u>	12 and 14	3	<u>L5</u>
<u>L4</u>	11 and coating.clm.	138	<u>L4</u>
<u>L3</u>	12 and triclosan.clm.	9	<u>L3</u>
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<u>L1</u>	chewing gum.clm.	1007	<u>L1</u>

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Term	Documents
DRUG.USPT.	86735
(4 AND (DRUG.CLM.)).USPT,JPAB,EPAB,DWPI,TDBD.	6
(L4 AND DRUG.CLM.).USPT,JPAB,EPAB,DWPI,TDBD.	6

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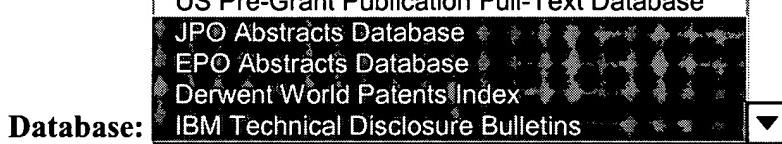
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<u>L12</u>	14 and 18	10	<u>L12</u>
<u>L11</u>	14 and triclosan	3	<u>L11</u>
<u>L10</u>	19 and triclosan	22	<u>L10</u>
<u>L9</u>	18 and 11	50	<u>L9</u>
<u>L8</u>	(cetylpyridinium or cetyl pyridinium)	4319	<u>L8</u>
<u>L7</u>	16 and triclosan	2	<u>L7</u>
<u>L6</u>	14 and active.clm.	18	<u>L6</u>
<u>L5</u>	12 and 14	3	<u>L5</u>
<u>L4</u>	11 and coating.clm.	138	<u>L4</u>
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<u>L2</u>	11 and triclosan	33	<u>L2</u>
<u>L1</u>	chewing gum.clm.	1007	<u>L1</u>

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Term	Documents
MEDICAMENT.USPT.	16430
ACTIVE.DWPI,TDBD,EPAB,JPAB,USPT.	1042903
AGENT.USPT.	447801
(4 AND ((MEDICAMENT.CLM.) OR (ACTIVE ADJ (AGENT.CLM.))).USPT,JPAB,EPAB,DWPI,TDBD.	7
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L17

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<u>L17</u>	l4 and (medicament.clm. or active agent.clm.)	7	<u>L17</u>
<u>L16</u>	l4 and high intensity	53	<u>L16</u>
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<u>L11</u>	l4 and triclosan	3	<u>L11</u>
<u>L10</u>	l9 and triclosan	22	<u>L10</u>
<u>L9</u>	l8 and l1	50	<u>L9</u>
<u>L8</u>	(cetylpyridinium or cetyl pyridinium)	4319	<u>L8</u>
<u>L7</u>	l6 and triclosan	2	<u>L7</u>
<u>L6</u>	l4 and active.clm.	18	<u>L6</u>
<u>L5</u>	l2 and l4	3	<u>L5</u>
<u>L4</u>	l1 and coating.clm.	138	<u>L4</u>
<u>L3</u>	l2 and triclosan.clm.	9	<u>L3</u>
<u>L2</u>	l1 and triclosan	33	<u>L2</u>
<u>L1</u>	chewing gum.clm.	1007	<u>L1</u>

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Term	Documents
TRICLOSAN.DWPI,TDBD,EPAB,JPAB,USPT.	1644
CETYLPYRIDINIUM.DWPI,TDBD,EPAB,JPAB,USPT.	2306
CETYL.DWPI,TDBD,EPAB,JPAB,USPT.	25366
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<u>L8</u>	(cetylpyridinium or cetyl pyridinium)	4319	<u>L8</u>
<u>L7</u>	l6 and triclosan	2	<u>L7</u>
<u>L6</u>	l4 and active.clm.	18	<u>L6</u>
<u>L5</u>	l2 and l4	3	<u>L5</u>
<u>L4</u>	l1 and coating.clm.	138	<u>L4</u>
<u>L3</u>	l2 and triclosan.clm.	9	<u>L3</u>
<u>L2</u>	l1 and triclosan	33	<u>L2</u>
<u>L1</u>	chewing gum.clm.	1007	<u>L1</u>

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Term	Documents
TRICLOSAN.DWPI,TDBD,EPAB,JPAB,USPT.	1644
CETYLPYRIDINIUM.DWPI,TDBD,EPAB,JPAB,USPT.	2306
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PYRIDINIUM.DWPI,TDBD,EPAB,JPAB,USPT.	23406
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(TRICLOSAN AND (CETYLPYRIDINIUM OR CETYL PYRIDINIUM)).USPT,JPAB,EPAB,DWPI,TDBD.	339

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Search:

119 and (emulsifier? or emulsifying agent ?)

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<u>L19</u>	triclosan and (cetylpyridinium or cetyl pyridinium)	339	<u>L19</u>
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<u>L17</u>	14 and (medicament.clm. or active agent.clm.)	7	<u>L17</u>
<u>L16</u>	14 and high intensity	53	<u>L16</u>
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<u>L14</u>	112 and triclosan	2	<u>L14</u>
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<u>L6</u>	14 and active.clm.	18	<u>L6</u>
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<u>L3</u>	12 and triclosan.clm.	9	<u>L3</u>
<u>L2</u>	11 and triclosan	33	<u>L2</u>
<u>L1</u>	chewing gum.clm.	1007	<u>L1</u>

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PYRIDINIUM.USPT.	18453
EMULSIF?	0
EMULSIFI.USPT.	134
EMULSIFN.USPT.	1
EMULSIFY.USPT.	5409
(20 AND (((CETYLPYRIDINIUM.CLM.) OR (TRICLOSAN.CLM.) OR (EMULSIF?.CLM.) OR (CETYL ADJ (PYRIDINIUM.CLM.))).USPT,JPAB,EPAB,DWPI,TDBD.	27
(L20 AND (TRICLOSAN.CLM. OR CETYLPYRIDINIUM.CLM. OR CETYL PYRIDINIUM.CLM. OR EMULSIF?.CLM.)).USPT,JPAB,EPAB,DWPI,TDBD.	27

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<u>L20</u>	l19 and (emulsifier? or emulsifying agent ?)	78	<u>L20</u>
<u>L19</u>	triclosan and (cetylpyridinium or cetyl pyridinium)	339	<u>L19</u>
<u>L18</u>	l17 and (triclosan or cetylpyridinium or cetyl pyridinium or cationic surfactant)	0	<u>L18</u>
<u>L17</u>	l4 and (medicament.clm. or active agent.clm.)	7	<u>L17</u>
<u>L16</u>	l4 and high intensity	53	<u>L16</u>
<u>L15</u>	l4 and drug.clm.	6	<u>L15</u>
<u>L14</u>	l12 and triclosan	2	<u>L14</u>
<u>L13</u>	l4 and l8	10	<u>L13</u>
<u>L12</u>	l4 and l8	10	<u>L12</u>
<u>L11</u>	l4 and triclosan	3	<u>L11</u>
<u>L10</u>	l9 and triclosan	22	<u>L10</u>
<u>L9</u>	l8 and l1	50	<u>L9</u>
<u>L8</u>	(cetylpyridinium or cetyl pyridinium)	4319	<u>L8</u>
<u>L7</u>	l6 and triclosan	2	<u>L7</u>
<u>L6</u>	l4 and active.clm.	18	<u>L6</u>
<u>L5</u>	l2 and l4	3	<u>L5</u>
<u>L4</u>	l1 and coating.clm.	138	<u>L4</u>
<u>L3</u>	l2 and triclosan.clm.	9	<u>L3</u>
<u>L2</u>	l1 and triclosan	33	<u>L2</u>
<u>L1</u>	chewing gum.clm.	1007	<u>L1</u>

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EMULSIFN.USPT.	1
EMULSIFY.USPT.	5409
(20 AND (((CETYLPYRIDINIUM.CLM.) OR (TRICLOSAN.CLM.) OR (EMULSIF?.CLM.)) OR (CETYL ADJ (PYRIDINIUM.CLM.))).USPT,JPAB,EPAB,DWPI,TDBD.	27
(L20 AND (TRICLOSAN.CLM. OR CETYL.PYRIDINIUM.CLM. OR CETYL PYRIDINIUM.CLM. OR EMULSIF?.CLM.)).USPT,JPAB,EPAB,DWPI,TDBD.	27

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<u>L20</u>	l19 and (emulsifier? or emulsifying agent ?)	78	<u>L20</u>
<u>L19</u>	triclosan and (cetylpyridinium or cetyl pyridinium)	339	<u>L19</u>
<u>L18</u>	l17 and (triclosan or cetylpyridinium or cetyl pyridinium or cationic surfactant)	0	<u>L18</u>
<u>L17</u>	l4 and (medicament.clm. or active agent.clm.)	7	<u>L17</u>
<u>L16</u>	l4 and high intensity	53	<u>L16</u>
<u>L15</u>	l4 and drug.clm.	6	<u>L15</u>
<u>L14</u>	l12 and triclosan	2	<u>L14</u>
<u>L13</u>	l4 and l8	10	<u>L13</u>
<u>L12</u>	l4 and l8	10	<u>L12</u>
<u>L11</u>	l4 and triclosan	3	<u>L11</u>
<u>L10</u>	l9 and triclosan	22	<u>L10</u>
<u>L9</u>	l8 and l11	50	<u>L9</u>
<u>L8</u>	(cetylpyridinium or cetyl pyridinium)	4319	<u>L8</u>
<u>L7</u>	l6 and triclosan	2	<u>L7</u>
<u>L6</u>	l4 and active.clm.	18	<u>L6</u>
<u>L5</u>	l2 and l4	3	<u>L5</u>
<u>L4</u>	l1 and coating.clm.	138	<u>L4</u>
<u>L3</u>	l2 and triclosan.clm.	9	<u>L3</u>
<u>L2</u>	l1 and triclosan	33	<u>L2</u>
<u>L1</u>	chewing gum.clm.	1007	<u>L1</u>

END OF SEARCH HISTORY

WEST

L16: Entry 4 of 53

File: USPT

US-PAT-NO: 6303159

DOCUMENT-IDENTIFIER: US 6303159 B1

TITLE: Comestible coating process applying powder and suspension syrup

DATE-ISSUED: October 16, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Barkalow; David G.	Deerfield	IL		
Richey; Lindell C.	Lake Zurich	IL		
Zuehlke; Julius W.	Chicago	IL		

US-CL-CURRENT: 426/5

CLAIMS:

We claim:

1. A method of coating comestibles comprising the steps of:
 - a) providing cores of comestible material to be coated;
 - b) applying a first coating syrup comprising a bulk sweetener to the cores;
 - c) applying a powder material over the first coating syrup;
 - d) repeating steps b) and c) to build up a first layer of coating on said cores; and
 - e) applying a second coating syrup comprising a bulk sweetener over the first layer of coating and drying the second coating syrup to form a second layer of coating on said cores, the bulk sweetener used in the first and second coating syrups being the same bulk sweetener and being hydrogenated isomaltulose, the second coating syrup comprising hydrogenated isomaltulose in an amount such that the second coating syrup is saturated and part of said hydrogenated isomaltulose is in the form of a solids

suspension in the second coating syrup.

2. The method of claim 1 wherein the comestible cores comprise chewing gum.

3. The method of claim 1 further comprising the step of applying said first coating syrup over said second layer of coating to form a smooth finish layer.

4. The method of claim 1 wherein the first coating syrup comprises between about 65% and about 73% total solids and the second coating syrup comprises between about 73% and about 82% total solids.

5. The method of claim 1 wherein the first coating syrup comprises between about 67% and about 72% total solids and the second coating syrup comprises between about 74% and about 78% total solids.

6. The method of claim 1 wherein the first coating syrup comprises about 70% total solids and the second coating syrup comprises about 76% total solids.

7. The method of claim 1 wherein the first coating syrup comprises about between 55% and about 72% hydrogenated isomaltulose and the second coating syrup comprises between about 72% and about 82% hydrogenated isomaltulose as the bulk sweetener.

8. The method of claim 1 wherein the powder material comprises a bulk sweetener which is the same bulk sweetener as is used in the first and second coating syrups.

9. The method of claim 1 wherein the first coating syrup comprises a binding agent selected from the group consisting of gum arabic, gum talha, gelatin, vegetable gums and mixtures thereof.

10. The method of claim 9 wherein the first coating syrup comprises between about 0.5% and about 10% of said binding agent.

11. The method of claim 1 wherein the second coating syrup is prepared by dissolving hydrogenated isomaltulose in water and then adding an additional amount of

hydrogenated isomaltulose in powder form to create said suspension.

12. The method of claim 11 wherein the powdered hydrogenated isomaltulose has a particle size such that 90% of the material is less than 100 microns.

13. The method of claim 1 wherein steps b) and c) are repeated at least five times.

14. The method of claim 1 wherein the second coating layer is formed by repeating step e) at least five times.

15. The method of claim 1 wherein a hard, crunching coating is formed on the comestibles.

16. The method of claim 1 wherein the coating is sugarless.

17. A method of coating comestibles comprising the steps of:

- a) providing cores of comestible material to be coated;
- b) applying a first coating syrup to cover the cores, the syrup comprising between about 55% and about 72% hydrogenated isomaltulose and between about 0. 5% and about 10% of a binding agent;
- c) applying a powdered material over the first coating syrup, the powdered material comprising hydrogenated isomaltulose;
- d) repeating steps b) and c) to build up a first layer of coating on said cores; and
- e) applying a second coating syrup over the first layer of coating and drying the second coating syrup to form a second coating layer on said cores, the second coating syrup comprising a hydrogenated isomaltulose in an amount such that the second coating syrup is saturated and a part of said hydrogenated isomaltulose is in the form of a solids suspension in the second coating syrup, whereby a hard, crunchy coating is formed on the comestibles.

18. The method of claim 17 wherein the powder material

comprises only hydrogenated isomaltulose.

19. The method of claim 17 wherein the first coating syrup has a total solids content of less than about 72%.

20. A method of producing a chewing gum product having a hard crunchy coating comprising the steps of:

- a) providing cores of chewing gum material to be coated;
- b) applying a first coating syrup to the cores, the first coating syrup comprising between about 55% and about 72% hydrogenated isomaltulose and between about 0.5% and about 10% of a binding agent;
- c) applying a dry powder material comprising hydrogenated isomaltulose over the first coating syrup;
- d) repeating steps b) and c) at least two times to build up a first layer of coating on the cores;
- e) applying a second coating syrup over the first layer of coating and drying the second coating syrup in repeated steps for at least four repetitions to form a second layer of coating, the second coating syrup comprising between about 0.5% and about 10% of a binding agent selected from the group consisting of gum arabic, gum talha, gelatin, cellulose derivatives and mixtures thereof, and between about 72% and about 82% hydrogenated isomaltulose, a portion of which is not dissolved but is suspended in the second coating syrup; and
- f) applying said first coating syrup over the second layer of coating and drying the first coating syrup, said application and drying being conducted in alternating repeating steps, to provide a smooth surface to the coated chewing gum product.

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L16: Entry 4 of 53

File: USPT

DOCUMENT-IDENTIFIER: US 6303159 B1

TITLE: Comestible coating process applying powder and suspension syrup

Brief Summary Text (26):

Depending on the particular sweetness release profile and shelf-stability needed, coated or uncoated high-intensity sweeteners may be used in the chewing gum composition. High-intensity sweeteners, preferably aspartame, may be used at levels from about 0.01% to about 3.0%. Encapsulated aspartame is a high intensity sweetener with improved stability and release characteristics, as compared to free aspartame. Free aspartame can also be added, and a combination of some free and encapsulated aspartame may be preferred when aspartame is used.

Brief Summary Paragraph Table (1):

Water 29.0% Hydrogenated Isomaltulose 43.65% Titanium Dioxide 1.0% 50% Gum Talha solution 4.1% Powder Hydrogenated Isomaltulose 22.15% High-Intensity Sweetener 0.1% Total 100%

Brief Summary Paragraph Table (2):

Thin Syrup, Suspension Syrup, % % Water 26.4 20.2 Hydrogenated Isomaltulose 66.9 50.0 Titanium Dioxide 0.9 0.9 40% Gum Talha Solution 5.3 5.9 Hydrogenated Isomaltulose Powder 0.0 23.5 High-Intensity Sweetener 0.4 0.4 Color 0.1 0.1 100.0 100.0 Calculated Moisture Content 29.6% 23.7% Total % solids 70 76

Detailed Description Text (6):

Standard gum coating procedures were followed for preparation of the syrup with hydrogenated isomaltulose as described previously. The formulation of the hydrogenated isomaltulose syrup for Example A is described in Table I. Gum talha was premixed in water to give a 40% solution and mixed into the hydrogenated isomaltulose solution. The hydrogenated isomaltulose syrup suspension was prepared by dissolving hydrogenated isomaltulose in water and heating to 85.degree. C. The gum talha solution, titanium dioxide, and high-intensity sweetener were added. This cools the syrup to 55.degree. C. The hydrogenated isomaltulose powder and color were added to give a hydrogenated isomaltulose syrup suspension. The syrup was then used to coat the above centers using the above procedure to increase piece weight to 1.52 grams per piece. As a dry charge, 0.23 Kg of powder hydrogenated isomaltulose was added at each of the first 15 syrup applications. Coating times and resulting product appearance are shown in Table 2.

Detailed Description Text (8):

This gum example was coated by the preferred process. The formulations for the two syrups are shown in Table 1. The thin hydrogenated isomaltulose syrup is syrup 3 and the suspension hydrogenated isomaltulose syrup is syrup 4. Gum talha was premixed in hot water to give a 40% solution and mixed into both syrup 3 and syrup 4. Both syrup 3 and syrup 4 were prepared by dissolving hydrogenated isomaltulose in water and heating to 85.degree. C. To syrup 4, gum talha solution, titanium dioxide, and high-intensity sweetener was added. This cooled syrup 4 to about 70.degree. C., then the hydrogenated isomaltulose powder and color were added to form a suspension. Syrup 3 was used in the first 15 syrup applications, and 0.56 Kg of powder hydrogenated isomaltulose was added after each of 15 applications of syrup 3. Syrup 4 was then applied for the next 20 applications with no dry charge. The final 6 to 10 applications were then coated with syrup 3 to the desired piece size. Coating times and the resulting product appearance are shown in Table 2.

Detailed Description Paragraph Table (2):

TABLE 1 Example A Example 1 Example 2 Example 3 Syrup 1 & 2 Syrup 3 Syrup 4 Syrup 5 Syrup 6 Syrup 7 Syrup 8 Water 14.17 kg 8.0 kg 5.35 kg 9.1 kg 5.35 kg 8.0 kg 5.35 kg Hydrogenated 25.00 kg 20.0 kg 12.50 kg 20.0 kg 12.50 kg 20.0 kg 12.50 kg Isomaltulose 40% Gum 3.22 kg 1.59 kg 1.49 kg 1.59 kg 1.49 kg 1.59 kg 1.49 kg 1.49 kg Talha Solution Hydrogenated 15.56 kg 0 kg 6.25 kg 0 kg 6.25 kg 0 kg 6.25 kg Isomaltulose Powder Titanium 0.533 kg 0.263 kg 0.246 kg 0.263 kg 0.246 kg 0.263 kg 0.246 kg Dioxide High-Intensity 0.223 kg 0.110 kg 0.103 kg 0.110 kg 0.103 kg 0.110 kg 0.103 kg Sweetener Color 0.047 kg 0.0232 kg 0.0217 kg 0.0232 kg 0.0217 kg 0.0232 kg 0.0217 kg Temp. (C.) 55 70 70 70 70 70 70 % Solids 72.6 70.1 75.9 67.6 75.9 70.1 75.9

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L16: Entry 4 of 53

File: USPT

Oct 16, 2001

US-PAT-NO: 6303159

DOCUMENT-IDENTIFIER: US 6303159 B1

TITLE: Comestible coating process applying powder and suspension syrup

DATE-ISSUED: October 16, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Barkalow; David G.	Deerfield	IL		
Richey; Lindell C.	Lake Zurich	IL		
Zuehlke; Julius W.	Chicago	IL		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Wm Wrigley Jr. Company	Chicago	IL			02

APPL-NO: 09/ 473671 [PALM]

DATE FILED: December 29, 1999

PARENT-CASE:

REFERENCE TO EARLIER FILED APPLICATION The present application claims the benefit of the filing date under 35 U.S.C. sctn.119(e) of Provisional U.S. patent application Ser. No. 60/114,265, filed Dec. 30, 1998, which is hereby incorporated by reference.

INT-CL: [07] A23 G 3/30

US-CL-ISSUED: 426/5

US-CL-CURRENT: 426/5

FIELD-OF-SEARCH: 426/3, 426/5

PRIOR-ART-DISCLOSED:

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PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
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<input type="checkbox"/> <u>4127677</u>	November 1978	Fronczowski et al.	426/5
<input type="checkbox"/> <u>4238510</u>	December 1980	Cherukuri et al.	426/5
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<input type="checkbox"/> <u>4423086</u>	December 1983	Devos et al.	427/3
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<input type="checkbox"/> <u>4792453</u>	December 1988	Reed et al.	426/5
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but published prior to Dec. 30, 1998.
Silesia Confiserie Manual No. 4, pp. 193-196 (1996).

ART-UNIT: 171

PRIMARY-EXAMINER: Corbin; Arthur L.

ABSTRACT:

A method of coating comestibles comprises the steps of providing cores of comestibles to be coated; applying a first coating syrup to the cores and a powder material over the first coating syrup in alternating steps to build up a first layer of coating on the cores; and applying a second coating syrup over the first layer of coating and drying the second coating syrup to form a second layer of coating on said cores, the second coating syrup comprising a bulk sweetener in an amount such that the second coating syrup is saturated and part of said bulk sweetener is in the form of a solids suspension in the second coating syrup.

20 Claims, 0 Drawing figures

Detailed Description Paragraph Table (3):

TABLE 1 Example A	Example 1	Example 2	Example 3	Syrup 1 & 2	Syrup 3	Syrup 4	Syrup 5	Syrup 6	Syrup 7	Syrup 8	Water
14.17 kg	8.0 kg	5.35 kg	9.1 kg	5.35 kg	8.0 kg	5.35 kg	Hydrogenated	25.00 kg	20.0 kg	12.50 kg	20.0 kg
12.50 kg	Isomaltulose	40% Gum	3.22 kg	1.59 kg	1.49 kg	1.59 kg	1.49 kg	1.59 kg	1.49 kg	Talha Solution	Hydrogenated
15.56 kg	0 kg	6.25 kg	0 kg	6.25 kg	0 kg	6.25 kg	Isomaltulose	Powder	Titanium	0.533 kg	0.263 kg
kg	0.263 kg	0.246 kg	Dioxide	<u>High-Intensity</u>	0.223 kg	0.110 kg	0.103 kg	0.110 kg	0.103 kg	0.110 kg	0.103 kg
Color	0.047 kg	0.0232 kg	0.0217 kg	0.0232 kg	0.0217 kg	0.0232 kg	0.0217 kg	0.0217 kg	Temp. (C.)	55 70	70 70 70 % Solids
72.6	70.1	75.9	67.6	75.9	70.1	75.9					

CLAIMS:

1. A method of coating comestibles comprising the steps of:
 - b) applying a first coating syrup comprising a bulk sweetener to the cores;
 - c) applying a powder material over the first coating syrup;
 - d) repeating steps b) and c) to build up a first layer of coating on said cores; and
 - e) applying a second coating syrup comprising a bulk sweetener over the first layer of coating and drying the second coating syrup to form a second layer of coating on said cores, the bulk sweetener used in the first and second coating syrups being the same bulk sweetener and being hydrogenated isomaltulose, the second coating syrup comprising hydrogenated isomaltulose in an amount such that the second coating syrup is saturated and part of said hydrogenated isomaltulose is in the form of a solids suspension in the second coating syrup.
 2. The method of claim 1 wherein the comestible cores comprise chewing gum.
 3. The method of claim 1 further comprising the step of applying said first coating syrup over said second layer of coating to form a smooth finish layer.
 4. The method of claim 1 wherein the first coating syrup comprises between about 65% and about 73% total solids and the second coating syrup comprises between about 73% and about 82% total solids.
 5. The method of claim 1 wherein the first coating syrup comprises between about 67% and about 72% total solids and the second coating syrup comprises between about 74% and about 78% total solids.
 6. The method of claim 1 wherein the first coating syrup comprises about 70% total solids and the second coating syrup comprises about 76% total solids.
 7. The method of claim 1 wherein the first coating syrup comprises about between 55% and about 72% hydrogenated isomaltulose and the second coating syrup comprises between about 72% and about 82% hydrogenated isomaltulose as the bulk sweetener.
 8. The method of claim 1 wherein the powder material comprises a bulk sweetener which is the same bulk sweetener as is used in the first and second coating syrups.
 9. The method of claim 1 wherein the first coating syrup comprises a binding agent selected from the group consisting of gum arabic, gum talha, gelatin, vegetable gums and mixtures thereof.
 10. The method of claim 9 wherein the first coating syrup comprises between about 0.5% and about 10% of said binding agent.
 11. The method of claim 1 wherein the second coating syrup is prepared by dissolving hydrogenated isomaltulose in water and then adding an additional amount of hydrogenated isomaltulose in powder form to create said suspension.
 14. The method of claim 1 wherein the second coating layer is formed by repeating step e) at least five times.
 15. The method of claim 1 wherein a hard, crunching coating is formed on the comestibles.
 16. The method of claim 1 wherein the coating is sugarless.

17. A method of coating comestibles comprising the steps of:

- b) applying a first coating syrup to cover the cores, the syrup comprising between about 55% and about 72% hydrogenated isomaltulose and between about 0.5% and about 10% of a binding agent;
- c) applying a powdered material over the first coating syrup, the powdered material comprising hydrogenated isomaltulose;
- d) repeating steps b) and c) to build up a first layer of coating on said cores; and
- e) applying a second coating syrup over the first layer of coating and drying the second coating syrup to form a second coating layer on said cores, the second coating syrup comprising a hydrogenated isomaltulose in an amount such that the second coating syrup is saturated and a part of said hydrogenated isomaltulose is in the form of a solids suspension in the second coating syrup, whereby a hard, crunchy coating is formed on the comestibles.

19. The method of claim 17 wherein the first coating syrup has a total solids content of less than about 72%.

20. A method of producing a chewing gum product having a hard crunchy coating comprising the steps of:

- a) providing cores of chewing gum material to be coated;
- b) applying a first coating syrup to the cores, the first coating syrup comprising between about 55% and about 72% hydrogenated isomaltulose and between about 0.5% and about 10% of a binding agent;
- c) applying a dry powder material comprising hydrogenated isomaltulose over the first coating syrup;
- d) repeating steps b) and c) at least two times to build up a first layer of coating on the cores;
- e) applying a second coating syrup over the first layer of coating and drying the second coating syrup in repeated steps for at least four repetitions to form a second layer of coating, the second coating syrup comprising between about 0.5% and about 10% of a binding agent selected from the group consisting of gum arabic, gum talha, gelatin, cellulose derivatives and mixtures thereof, and between about 72% and about 82% hydrogenated isomaltulose, a portion of which is not dissolved but is suspended in the second coating syrup; and
- f) applying said first coating syrup over the second layer of coating and drying the first coating syrup, said application and drying being conducted in alternating repeating steps, to provide a smooth surface to the coated chewing gum product.

WEST

L16: Entry 6 of 53

File: USPT

US-PAT-NO: 6190705

DOCUMENT-IDENTIFIER: US 6190705 B1

TITLE: Syrups and comestible coatings made therefrom containing an emulsion

DATE-ISSUED: February 20, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Richey; Lindell C.	Lake Zurich	IL		

US-CL-CURRENT: 426/5; 426/3, 426/302, 426/303, 426/304, 426/305, 426/4

CLAIMS:

What is claimed is:

1. A coating syrup for use in forming a coating on a comestible, the coating syrup comprising:
 - a) a flavor emulsion comprising:
 - i) water,
 - ii) an oil-based flavoring agent and
 - iii) an emulsifier;
 - b) a bulk sweetener; and
 - c) a solvent.
2. The coating syrup of claim 1 wherein the solvent comprises water.
3. The coating syrup of claim 1 wherein the bulk sweetener is selected from the group consisting of sucrose, dextrose, xylitol, sorbitol, maltitol, hydrogenated isomaltulose, lactitol, erythritol and mixtures thereof.
4. The coating syrup of claim 1 wherein the flavor

emulsion further comprises an acid and said emulsifier is selected from the group consisting of gum arabic, gum talha, xanthan gum, carrageenan and mixtures thereof.

5. The coating syrup of claim 4 wherein the acid is selected from the group consisting of citric acid, malic acid, tartaric acid and mixtures thereof.

6. The coating syrup of claim 1 wherein the flavoring agent is selected from the group consisting of fruit flavors, spearmint flavor, peppermint flavor and wintergreen flavor.

7. The coating syrup of claim 1 wherein the emulsifier is selected from the group consisting of gum arabic, gum talha, xanthan gum, carrageenan and mixtures thereof.

8. The coating syrup of claim 1 wherein the flavor emulsion comprises about 1% to about 50% of an emulsifier, about 45% to about 94% water and about 5% to about 30% flavor.

9. An emulsion comprising:

- a) about 5% to about 30% of an oil-based flavoring agent;
- b) a food grade acid;
- c) about 45% to about 94% water; and
- d) about 1% to about 50% of an emulsifier selected from the group consisting of gum arabic, gum talha, xanthan gum, carrageenan and mixtures thereof.

10. The emulsion of claim 9 wherein the oil based flavoring agent comprises a fruit flavor and the emulsifier comprises gum arabic.

11. A coated comestible comprising:

- a) a core comprising a comestible; and
- b) a coating covering said core comprising:
 - i) a bulk sweetener and

ii) an oil-based flavoring agent premixed with water and an emulsifier to form an emulsion.

12. The coated comestible of claim 11 wherein the core comprises a chewing gum pellet.

13. The coated comestible of claim 11 wherein the coating comprises layers and the mixture of emulsifier and flavoring agent is in a separate layer from the bulk sweetener.

14. The coated comestible of claim 11 wherein the coating comprises layers and at least one layer comprises both the mixture of emulsifier and flavoring agent and the bulk sweetener.

15. The coated comestible of claim 11 wherein the coating further comprises a food grade acid and said emulsifier is selected from the group consisting of gum arabic, gum talha, xanthan gum, carrageenan and mixtures thereof.

16. The coated comestible of claim 15 wherein the coating comprises layers and the acid and mixture of emulsifier and flavoring agent are in the same layer.

17. The coated comestible of claim 16 wherein the acid, mixture of flavor and emulsifier and the bulk sweetener are all in a common layer.

18. The coated comestible of claim 11 wherein the coating comprises a hard shell coating.

19. The coated comestible of claim 11 wherein the bulk sweetening agent comprises a sugar sweetener.

20. The coated comestible of claim 11 wherein the bulk sweetening agent comprises a sugarless sweetener.

21. The coated comestible of claim 11 wherein the coating further comprises a high-intensity sweetener.

22. The coated comestible of claim 11 wherein the comestible comprises chewing gum; the bulk sweetener comprises xylitol; the oil-based flavoring comprises a fruit-flavor; the emulsifier comprises gum arabic; and the coating further comprises a food grade acid.

23. A method of forming a coating on a comestible comprising the steps of:
- a) providing a core comprising the comestible;
 - b) providing a solution of a bulk sweetener and a solvent;
 - c) providing an emulsion of an oil-based flavoring agent, water and an emulsifier;
 - d) combining the bulk sweetener solution and the emulsion together and applying the combination to cover the core; and
 - e) drying the solvent to form a dry coating on the core.
24. The method of claim 23 wherein the bulk sweetener solution and the emulsion are premixed before being applied to cover the core.
25. The method of claim 23 wherein the bulk sweetener solution and the emulsion are combined as they are applied to the core.
26. The method of claim 23 wherein the bulk sweetener solution is applied to the core and the emulsion is combined with the solution on the core.
27. The method of claim 23 wherein the dry coating on the core is formed by applying successive layers of bulk sweetener solution and drying each layer.
28. The method of claim 27 wherein multiple layers of bulk sweetener solution not combined with the emulsion are applied before and after applying the combination of the bulk sweetener solution and the emulsion.
29. The method of claim 23 wherein the emulsion further contains a food grade acid and said emulsifier is selected from the group consisting of gum arabic, gum talha, xanthan gum, carrageenan and mixtures thereof.
30. A method of forming a coating on a comestible comprising the steps of:

- a) providing a core comprising the comestible;
- b) providing a solution of a bulk sweetener and a solvent;
- c) providing an emulsion of a food grade acid, water and an emulsifier selected from the group consisting of gum arabic, gum talha, xanthan gum, carrageenan and mixtures thereof;
- d) combining the bulk sweetener solution and the emulsion together and applying the combination to cover the core; and
- e) drying the solvent to form a dry coating on the core.

31. The method of claim 30 wherein the bulk sweetener is a sugar sweetener.

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L16: Entry 6 of 53

File: USPT

DOCUMENT-IDENTIFIER: US 6190705 B1

TITLE: Syrups and comestible coatings made therefrom containing an emulsion

Brief Summary Text (34):

Depending on the particular sweetness release profile and shelf-stability needed, coated or uncoated high-intensity sweeteners may be used in the chewing gum composition. High-intensity sweeteners, preferably aspartame, may be used at levels from about 0.01% to about 3.0%. Encapsulated aspartame is a high intensity sweetener with improved stability and release characteristics, as compared to free aspartame. Free aspartame can also be added, and a combination of some free and encapsulated aspartame is preferred when aspartame is used.

Detailed Description Text (14):

One of the benefits of the process of Example B is that the high intensity sweetener is not in the hot coating syrup for extended periods of time during which it could degrade. Also, the high intensity sweetener and the flavor are in the same layer of the coating, and hence are released simultaneously.

CLAIMS:

1. A coating syrup for use in forming a coating on a comestible, the coating syrup comprising:
 2. The coating syrup of claim 1 wherein the solvent comprises water.
 3. The coating syrup of claim 1 wherein the bulk sweetener is selected from the group consisting of sucrose, dextrose, xylitol, sorbitol, maltitol, hydrogenated isomaltulose, lactitol, erythritol and mixtures thereof.
 4. The coating syrup of claim 1 wherein the flavor emulsion further comprises an acid and said emulsifier is selected from the group consisting of gum arabic, gum talha, xanthan gum, carrageenan and mixtures thereof.
 5. The coating syrup of claim 4 wherein the acid is selected from the group consisting of citric acid, malic acid, tartaric acid and mixtures thereof.
 6. The coating syrup of claim 1 wherein the flavoring agent is selected from the group consisting of fruit flavors, spearmint flavor, peppermint flavor and wintergreen flavor.
 7. The coating syrup of claim 1 wherein the emulsifier is selected from the group consisting of gum arabic, gum talha, xanthan gum, carrageenan and mixtures thereof.
 8. The coating syrup of claim 1 wherein the flavor emulsion comprises about 1% to about 50% of an emulsifier, about 45% to about 94% water and about 5% to about 30% flavor.
- b) a coating covering said core comprising:
 12. The coated comestible of claim 11 wherein the core comprises a chewing gum pellet.
 13. The coated comestible of claim 11 wherein the coating comprises layers and the mixture of emulsifier and flavoring agent is in a separate layer from the bulk sweetener.
 14. The coated comestible of claim 11 wherein the coating comprises layers and at least one layer comprises both the mixture of emulsifier and flavoring agent and the bulk sweetener.

15. The coated comestible of claim 11 wherein the coating further comprises a food grade acid and said emulsifier is selected from the group consisting of gum arabic, gum talha, xanthan gum, carrageenan and mixtures thereof.
16. The coated comestible of claim 15 wherein the coating comprises layers and the acid and mixture of emulsifier and flavoring agent are in the same layer.
18. The coated comestible of claim 11 wherein the coating comprises a hard shell coating.
21. The coated comestible of claim 11 wherein the coating further comprises a high-intensity sweetener.
22. The coated comestible of claim 11 wherein the comestible comprises chewing gum; the bulk sweetener comprises xylitol; the oil-based flavoring comprises a fruit-flavor; the emulsifier comprises gum arabic; and the coating further comprises a food grade acid.
23. A method of forming a coating on a comestible comprising the steps of:
 - e) drying the solvent to form a dry coating on the core.
27. The method of claim 23 wherein the dry coating on the core is formed by applying successive layers of bulk sweetener solution and drying each layer.
30. A method of forming a coating on a comestible comprising the steps of:
 - e) drying the solvent to form a dry coating on the core.

WEST

L16: Entry 6 of 53

File: USPT

Feb 20, 2001

US-PAT-NO: 6190705

DOCUMENT-IDENTIFIER: US 6190705 B1

TITLE: Syrups and comestible coatings made therefrom containing an emulsion

DATE-ISSUED: February 20, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Richey; Lindell C.	Lake Zurich	IL		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Wm. Wrigley Jr. Company	Chicago	IL			02

APPL-NO: 09/ 513718 [PALM]

DATE FILED: February 24, 2000

PARENT-CASE:

CROSS-REFERENCE TO RELATED APPLICATION The present application is a continuation of PCT application Ser. No. US97/15235, filed Aug. 27, 1997, which designated the United States, and which is incorporated herein by reference.

INT-CL: [07] A23 A 3/30

US-CL-ISSUED: 426/5; 426/3, 426/4, 426/302, 426/303, 426/304, 426/305

US-CL-CURRENT: 426/5; 426/3, 426/302, 426/303, 426/304, 426/305, 426/4

FIELD-OF-SEARCH: 426/3, 426/4, 426/5, 426/6, 426/302, 426/303, 426/304, 426/305

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>4135005</u>	January 1979	Cheng	426/659
<input type="checkbox"/> <u>4786491</u>	November 1988	Patel	424/48
<input type="checkbox"/> <u>4931293</u>	June 1990	Cherukuri et al.	426/5
<input type="checkbox"/> <u>4971798</u>	November 1990	Coia et al.	424/440
<input type="checkbox"/> <u>5135761</u>	August 1992	Dave et al.	426/5
<input type="checkbox"/> <u>5248508</u>	September 1993	Reed et al.	426/5
<input type="checkbox"/> <u>5270061</u>	December 1993	Reed et al.	426/5
<input type="checkbox"/> <u>5273763</u>	December 1993	Merz et al.	426/101
<input type="checkbox"/> <u>5376389</u>	December 1994	Reed et al.	426/5
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0736258	October 1996	EP	
0 736 258 A2	October 1996	EP	
WO 91/17821	November 1991	WO	
WO 95/07625	March 1995	WO	
WO 95/07622	March 1995	WO	
WO 99/09840	March 1999	WO	

ART-UNIT: 171

PRIMARY-EXAMINER: Sayala; Chhaya D.

ABSTRACT:

A coating syrup is made using an emulsion of an emulsifier and either an oil-based flavoring agent, a food acid or both. The emulsion may be used to coat comestibles, such as pellets of chewing gum. The emulsion helps to retain volatile flavors that may otherwise flash off during the coating opération.

31 Claims, 0 Drawing figures

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L16: Entry 7 of 53

File: USPT

US-PAT-NO: 6165516

DOCUMENT-IDENTIFIER: US 6165516 A

TITLE: Method of controlling release of caffeine in chewing gum

DATE-ISSUED: December 26, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gudas; Victor V.	Oak Lawn	IL		
Reed; Michael A.	Merrillville	IN		
Schnell; Philip G.	Downers Grove	IL		
Typrin; Henry T.	Palos Park	IL		
Russell; Michael P.	Evergreen Park	IL		
Witkewitz; David L.	Bridgeview	IL		

US-CL-CURRENT: 426/3; 424/48

CLAIMS:

We claim:

1. A method of producing a chewing gum containing physically-modified caffeine in order to increase the release rate of the caffeine comprising the steps of:
 - a) mixing a quantity of caffeine with an encapsulating agent to form a physically-modified caffeine having an increased release rate; and
 - b) adding a quantity of the physically-modified caffeine to a chewing gum formulation to provide a caffeine level in the gum of from about 0.2% to about 5%.
2. The method of claim 1 wherein the caffeine and encapsulating agent are also mixed with a solvent and the resulting mixture is dried prior to being added to the chewing gum.
3. The method of claim 2 wherein the encapsulating material is selected from the group consisting of maltodextrin and gum arabic.

4. The method of claim 2 wherein the mixture is spray dried and the solvent comprises water.

5. The method of claim 2 wherein a high-potency sweetener selected from the group consisting of aspartame, alitame, salts of acesulfame, cyclamate and its salts, saccharine and its salts, thaumatin, monellin, dihydrochalcones and combinations thereof is mixed in the mixture in combination with the caffeine.

6. A chewing gum made according to the method of claim 2.

7. A method of producing a chewing gum containing physically-modified caffeine in order to increase the release rate of caffeine comprising the steps of:

a) mixing a quantity of caffeine with an agglomerating agent and a solvent to partially coat the caffeine;

b) removing the solvent from the mixture of caffeine and agglomerating agent to form a dried material having an increased rate of release of the caffeine; and

c) adding a quantity of the dried material to a chewing gum formulation to provide a caffeine level in the gum of from about 0.2% to about 5%.

8. The method of claim 7 wherein the level of coating on the agglomerated caffeine is at least about 5%.

9. The method of claim 7 wherein the level of coating on the agglomerated caffeine is at least about 15%.

10. The method of claim 7 wherein the level of coating on the agglomerated caffeine is at least about 20%.

11. The method of claim 7 wherein the dried material is ground to a powder prior to adding the dried material to the chewing gum.

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L16: Entry 7 of 53

File: USPT

Dec 26, 2000

US-PAT-NO: 6165516

DOCUMENT-IDENTIFIER: US 6165516 A

TITLE: Method of controlling release of caffeine in chewing gum

DATE-ISSUED: December 26, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gudas; Victor V.	Oak Lawn	IL		
Reed; Michael A.	Merrillville	IN		
Schnell; Philip G.	Downers Grove	IL		
Tyrrin; Henry T.	Palos Park	IL		
Russell; Michael P.	Evergreen Park	IL		
Witkewitz; David L.	Bridgeview	IL		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Wm. Wrigley Jr. Company	Chicago	IL			02

APPL-NO: 09/ 308972 [PALM]

DATE FILED: May 27, 1999

PCT-DATA:

APPL-NO	DATE-FILED	PUB-NO	PUB-DATE	371-DATE	102(E)-DATE
PCT/US96/18977	November 27, 1996	WO98/23165	Jun 4, 1998	May 27, 1999	May 27, 1999

INT-CL: [07] A23 G 3/30, A61 K 9/68

US-CL-ISSUED: 426/3; 424/48

US-CL-CURRENT: 426/3; 424/48

FIELD-OF-SEARCH: 426/3, 426/5, 426/6, 424/48

PRIOR-ART-DISCLOSED:

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 [Search Selected](#) [Search ALL](#)

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>1298670</u>	April 1919	Cramer	
<input type="checkbox"/> <u>3011949</u>	December 1961	Bilotti	
<input type="checkbox"/> <u>3075884</u>	January 1963	Bilotti et al.	
<input type="checkbox"/> <u>4238475</u>	December 1980	Witzel et al.	424/48
<input type="checkbox"/> <u>4452821</u>	June 1984	Gergely	426/5
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<input type="checkbox"/> <u>4978537</u>	December 1990	Song	426/5
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Dr. Massimo Calanchi and Dr. Sam Ghanta, Taste-masking of oral formulations, Eurand International SpA, Pharmaceutical Manufacturing International, 1996 (5 pages).

The Eurand Group, Brochure (16 pages) (undated) (published at least before Nov. 27, 1996).

Merck Index, 11.sup.th Ed., #1635 "Caffeine", p. 248 (1989).

ART-UNIT: 171

PRIMARY-EXAMINER: Corbin; Arthur L.

ABSTRACT:

A method for producing a chewing gum with a controlled release of caffeine, as well as the chewing gum so produced, is obtained by physically modifying caffeine's properties by coating and drying. Caffeine is coated by encapsulation, partially coated by agglomeration, entrapped by absorption, or treated by multiple steps of encapsulation, agglomeration, and absorption. The coated caffeine is then co-dried and particle sized to produce a release-modified caffeine. When incorporated into the chewing gum, these particles are adapted to produce a fast release or a delayed release when the gum is chewed.

11 Claims, 0 Drawing figures

WEST

L16: Entry 9 of 53

File: USPT

US-PAT-NO: 6080432

DOCUMENT-IDENTIFIER: US 6080432 A

TITLE: Chewing gum composition containing sodium glycinate and method of making a chewing gum product therefrom

DATE-ISSUED: June 27, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tyrrin; Henry T.	Palos Park	IL		
Wolf; Fred R.	West Des Moines	IA		

US-CL-CURRENT: 426/3; 426/5

CLAIMS:

We claim:

1. A chewing gum composition comprising:
 - a) about 5% to about 95% gum base;
 - b) about 5% to about 95% bulking and sweetening agents;
 - c) about 0.1% to about 15% flavor; and
 - d) about 0.02% to about 5% sodium glycinate.
2. The chewing gum composition of claim 1 further comprising an ingredient which gives the chewing gum composition a bitter taste.
3. The chewing gum composition of claim 2 wherein the bitter tasting ingredient is selected from the group consisting of caffeine, peppermint oil, menthol, spearmint oil, oil of wintergreen, physiological cooling agents and medicants.
~~~~~
4. The chewing gum composition of claim 1 wherein the sodium glycinate is present at a level of between about 0.05% and about 2%.

5. The chewing gum composition of claim 1 wherein the sodium glycinate is present at a level of between about 0.1% and about 1%.

6. The chewing gum composition of claim 1 wherein the sodium glycinate is treated to modify its rate of release from the chewing gum.

7. The chewing gum composition of claim 6 wherein the sodium glycinate is treated by encapsulation.

8. The chewing gum composition of claim 6 wherein the sodium glycinate is treated by agglomeration.

9. The chewing gum composition of claim 6 wherein the sodium glycinate is treated by fixation.

10. The chewing gum composition of claim 6 wherein the sodium glycinate is treated by entrapment.

11. A chewing gum product made from the chewing gum composition of claim 1.

12. The chewing gum product of claim 11 wherein the sodium glycinate is present in a dusting compound used on the product.

13. The chewing gum product of claim 11 wherein the sodium glycinate is present in a coating applied to the gum.

14. The chewing gum product of claim 1 wherein the bulking and sweetening agents comprise sugar and glucose syrup.

15. A method of making a chewing gum product with reduced bitterness comprising the steps of:

a) mixing about 5% to about 95% gum base, about 5% to 95% bulking and sweetening agents, and about 0.1% to about 15% flavor to form a chewing gum composition, the chewing gum including an ingredient which gives the chewing gum composition a bitter taste; and

b) while making the gum composition, adding sodium glycinate in an amount sufficient to provide the gum

composition with suppressed bitterness.

16. The method of claim 15 wherein the sodium glycinate is treated so as to modify its release rate from chewing gum before being mixed into the gum composition.

17. The method of claim 15 wherein the sodium glycinate is present at a level of between about 0.02% and about 5%.

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L16: Entry 12 of 53

File: USPT

US-PAT-NO: 5980955

DOCUMENT-IDENTIFIER: US 5980955 A

TITLE: Coated chewing gum product and method of making

DATE-ISSUED: November 9, 1999

## INVENTOR-INFORMATION:

| NAME                  | CITY               | STATE | ZIP CODE | COUNTRY |
|-----------------------|--------------------|-------|----------|---------|
| Greenberg; Michael J. | Northbrook         | IL    |          |         |
| Barkalow; David G.    | Deerfield          | IL    |          |         |
| Keck; Hubert          | Freiburg-Munzingen |       |          | DE      |

US-CL-CURRENT: 426/5; 426/3

## CLAIMS:

We claim:

1. A chewing gum product having a coating made from a syrup comprising:
  - a) a primary coating material; and
  - b) a poorly water-soluble food acceptable salt having a solubility of between about 0.5 and about 9% in 10.degree. C. water.
2. The product of claim 1 wherein the primary coating material is selected from the group consisting of sucrose, maltose, dextrose, xylitol, sorbitol, maltitol, mannitol, lactitol, erythritol, hydrogenated isomaltulose and combinations thereof.
3. The product of claim 1 wherein the primary coating material comprises xylitol.
4. The product of claim 3 wherein the primary coating material further comprises another sugar alcohol.
5. The product of claim 1 wherein the poorly water-soluble salt comprises a calcium salt.

6. The product of claim 1 wherein the poorly water-soluble salt comprises a sodium salt.
7. The product of claim 1 wherein the poorly water-soluble salt is selected from the group consisting of calcium gluconate, calcium glycerophosphate, calcium lactate, calcium phosphate, calcium malate, calcium maleate, calcium benzoate, sodium sulfate and combinations thereof.
8. The product of claim 1 wherein the poorly water-soluble salt comprises calcium gluconate.
9. The product of claim 1 wherein the salt has a solubility in 10.degree. C. water of between about 1 and about 7%.
10. The product of claim 1 wherein the salt has a solubility in 10.degree. C. water of between about 2 and about 6%.
11. The product of claim 1 wherein the poorly water-soluble salt comprises about 0.5 to 15% of the coating.
12. The product of claim 1 wherein the poorly water-soluble salt comprises about 1 to 7% of the coating.
13. The product of claim 1 wherein the poorly water-soluble salt comprises about 1.5 to 5% of the coating.
14. The product of claim 1 wherein the primary coating material comprises about 61 to 99.5% of the coating.
15. The product of claim 1 wherein the primary coating material comprises about 75 to 98% of the coating.
16. The product of claim 1 wherein the product is a chewing gum.
17. The product of claim 1 wherein the product is a substantially sugarless chewing gum.

18. The product of claim 1 wherein the coating is a soft coating.

19. The product of claim 1 wherein the coating is a hard coating.

20. The coated product of claim 1 wherein the salt is selected from the group consisting of calcium gluconate, calcium glycerophosphate, calcium lactate, calcium phosphate, calcium malate, calcium benzoate, sodium sulfate and combinations thereof.

21. A chewing gum product having a coating made from a coating syrup comprising:

a) a poorly water-soluble, food acceptable salt having a solubility of between about 0.5 and about 9% in 10.degree. C. water; and

b) a primary coating material, wherein the coating has an improved appearance compared to a coating made from the same primary coating material but without the poorly water-soluble salt.

22. The product of claim 21 wherein

a) the poorly water-soluble salt is selected from the group consisting of calcium gluconate, calcium glycerophosphate, calcium lactate, calcium phosphate, calcium malate, calcium maleate, calcium benzoate, sodium sulfate and combinations thereof; and

b) the primary coating material is selected from the group consisting of sucrose, maltose, dextrose, xylitol, sorbitol, maltitol, mannitol, lactitol, erythritol, hydrogenated isomaltulose and combinations thereof.

23. The product of claim 21 wherein the product is a substantially sugarless chewing gum.

24. The product of claim 23 wherein the salt comprises calcium gluconate, and the primary coating material comprises xylitol.

25. The product of claim 21 wherein the poorly water-soluble salt comprises a calcium salt.

26. The product of claim 21 wherein the poorly water-soluble salt comprises a sodium salt.

27. The product of claim 21 wherein the salt has a solubility in 10.degree. C. water of between about 1 to about 7%.

28. The product of claim 21 wherein the salt has a solubility in 10.degree. C. water of between about 2 to about 6%.

29. The coated product of claim 21 wherein the salt is selected from the group consisting of calcium gluconate, calcium glycerophosphate, calcium lactate, calcium phosphate, calcium malate, calcium benzoate, sodium sulfate and combinations thereof.

30. A method of coating a chewing gum product comprising the steps of:

a) providing a chewing gum product; and

b) coating the product with a coating syrup comprising:

i) a poorly water-soluble, food acceptable salt having a water solubility of between about 0.5 and about 9% in 10.degree. C. water; and

ii) a primary coating material.

31. The method of claim 30 wherein.

a) the poorly water-soluble salt is selected from the group consisting of calcium gluconate, calcium glycerophosphate, calcium lactate, calcium phosphate, calcium malate, calcium maleate, calcium benzoate, sodium sulfate and combinations thereof; and

b) the primary coating material is selected from the group consisting of sucrose, maltose, dextrose, xylitol, sorbitol, maltitol, mannitol, lactitol, erythritol, hydrogenated isomaltulose and combinations thereof.

32. The method of claim 30 wherein the product is a substantially sugarless chewing gum.

33. The method of claim 32 wherein the salt comprises calcium gluconate, and the primary coating material comprises xylitol.

34. The method of claim 30 wherein the poorly water-soluble salt comprises a calcium salt.

35. The method of claim 30 wherein the poorly water-soluble salt comprises a sodium salt.

36. The method of claim 30 wherein the salt has a solubility in 10.degree. C. water of between about 1 to about 7%.

37. The method of claim 30 wherein the salt has a solubility in 10.degree. C. water of between about 2 to about 6%.

38. The method of claim 30 wherein the salt is selected from the group consisting of calcium gluconate, calcium glycerophosphate, calcium lactate, calcium phosphate, calcium malate, calcium benzoate, sodium sulfate and combinations thereof.

39. A method of improving the appearance of a coated chewing gum product that is made by coating the product with a coating syrup, the improvement comprising the step of including a poorly water-soluble, food acceptable salt in the coating syrup, the salt having a solubility of between about 0.5 and about 9% in 10.degree. C. water.

40. The method of claim 39 wherein

a) the poorly water-soluble salt is selected from the group consisting of calcium gluconate, calcium glycerophosphate, calcium lactate, calcium phosphate, calcium malate, calcium maleate, calcium benzoate, sodium sulfate and combinations thereof; and

b) the coating syrup further comprises a primary coating material selected from the group consisting of sucrose, maltose, dextrose, xylitol, sorbitol, maltitol, mannitol, lactitol, erythritol, hydrogenated isomaltulose and combinations thereof.

41. The method of claim 39 wherein the product is a substantially sugarless chewing gum.

42. The method of claim 41 wherein the salt comprises calcium gluconate, and the primary coating material comprises xylitol.

43. The method of claim 39 wherein the poorly water-soluble salt comprises a calcium salt.

44. The method of claim 39 wherein the poorly water-soluble salt comprises a sodium salt.

45. The method of claim 39 wherein the salt has a solubility in 10.degree. C. water of between about 1 and about 7%.

46. The method of claim 39 wherein the salt has a solubility in 10.degree. C. water of between about 2 and about 6%.

47. The method of claim 39 wherein the salt is selected from the group consisting of calcium gluconate, calcium glycerophosphate, calcium lactate, calcium phosphate, calcium malate, calcium benzoate, sodium sulfate and combinations thereof.

48. A chewing gum coated product having a coating made from a syrup comprising:

a) a primary coating material; and

b) between about 1.5 and about 5%, by weight of the syrup, of a poorly water-soluble, food acceptable salt selected from the group consisting of calcium gluconate, calcium glycerophosphate, calcium lactate, calcium phosphate, calcium malate, calcium benzoate, sodium sulfate and combinations thereof.

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L16: Entry 16 of 53

File: USPT

US-PAT-NO: 5716652

DOCUMENT-IDENTIFIER: US 5716652 A

TITLE: Coated chewing gum products and methods of manufacturing same

DATE-ISSUED: February 10, 1998

## INVENTOR-INFORMATION:

| NAME                  | CITY         | STATE | ZIP CODE | COUNTRY |
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| Yilmazer; Gulcin      | Chicago      | IL    |          |         |
| McGrew; Gordon N.     | Evanston     | IL    |          |         |
| Yatka; Robert J.      | Orland Park  | IL    |          |         |

US-CL-CURRENT: 426/5; 426/6

## CLAIMS:

We claim:

1. A chewing gum product comprising:

a center including a water soluble portion and a water insoluble portion;

a first coating that substantially encloses the center and comprises a blend of xylitol and mannitol; and

a second coating that substantially encloses the first coating and consists essentially of one polyol.

2. The chewing gum product of claim 1 wherein the first coating includes only xylitol and mannitol.

3. The chewing gum product of claim 1 wherein the second coating is xylitol.

4. The chewing gum product of claim 1 wherein the second coating is maltitol.

5. The chewing gum product of claim 1 wherein the product has a substantially rectangular shape.

6. The chewing gum product of claim 1 wherein the product has a substantially spherical shape.

7. The chewing gum product of claim 1 wherein the second coating is a polyol chosen from the group consisting of: xylitol; mannitol; erythritol; lactitol; maltitol; and palatinit.

8. The chewing gum product of claim 1 wherein the second coating comprises 5 to about 50 percent by weight of the total coating that encloses the center.

9. A chewing gum comprising:

a center including a water soluble portion and a water insoluble portion;

a first coating that substantially surrounds the center and includes a xylitol/mannitol blend; and

a second coating that surrounds the first coating, the second coating consisting essentially of polyol.

10. The chewing gum of claim 9 wherein the xylitol/mannitol blend is used in a ratio of 95:5 to 50:50.

11. The chewing gum of claim 9 wherein the first and second coatings include non-polyol ingredients.

12. A method of manufacturing chewing gum comprising the steps of:

creating a chewing gum product having a shape that includes a water soluble portion and a water insoluble portion;

coating the shaped product with a first coating of a xylitol/mannitol blend; and

coating the first coating with a second coating that consists essentially of a single polyol.

13. The method of claim 12 wherein the shaped product is coated by use of a tumbling means.

**WEST**  

L16: Entry 18 of 53

File: USPT

US-PAT-NO: 5665406

DOCUMENT-IDENTIFIER: US 5665406 A

TITLE: Polyol coated chewing gum having improved shelf life and method of making

DATE-ISSUED: September 9, 1997

## INVENTOR-INFORMATION:

| NAME                | CITY         | STATE | ZIP CODE | COUNTRY |
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| Hook; Jeffrey S.    | Berwyn       | IL    |          |         |
| Yatka; Robert J.    | Orland Park  | IL    |          |         |
| Typrin; Henry T.    | Midlothian   | IL    |          |         |
| Broderick; Kevin B. | Berwyn       | IL    |          |         |
| Meyers; Marc A.     | Naperville   | IL    |          |         |

US-CL-CURRENT: 426/5; 426/6

## CLAIMS:

We claim:

1. A dual composition hard coated chewing gum, comprising:

from about 35 to about 90 weight percent of a gum center, including a bulk portion, a chewing gum base and one or more flavoring agents; and

from about 10 to about 65 weight percent of an outer coating containing from about 50 to about 100%, by weight, of at least one polyol selected from the group consisting of lactitol, maltitol, hydrogenated isomaltulose and erythritol, and which comprises at least two sequential layers, each containing about 50 to about 100%, by weight, of at least one polyol selected from the group consisting of lactitol, maltitol, hydrogenated isomaltulose and erythritol;

the layers constituting an inner component of the outer coating and an outer component of the outer coating;

the layers of the inner component of the outer coating comprising at least one polyol selected from the group consisting of lactitol, maltitol, hydrogenated isomaltulose and erythritol;

the layers of the outer component of the outer coating comprising at least one polyol selected from the group consisting of lactitol, maltitol, hydrogenated isomaltulose and erythritol; and wherein

at least one polyol contained in the outer component of the outer coating is not present in the inner component of the outer coating.

2. A dual composition hard coated chewing gum according to claim 1, wherein layers of lactitol, maltitol or hydrogenated isomaltulose, constituting the inner component of the outer coating, are applied before layers of erythritol, constituting the outer component of the outer coating.

3. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes an elastomer selected from the group consisting of polyisobutylene, isobutylene-isoprene copolymer, styrene butadiene rubber, natural latexes, and combinations thereof.

4. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes a resin selected from the group consisting of polyvinyl acetate, terpene resins, ester gums, and combinations thereof.

5. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes fats and oils selected from the group consisting of animal fats, vegetable oils, hydrogenated vegetable oils, partially hydrogenated vegetable oils, cocoa butter, and combinations thereof.

6. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes a wax selected from the group consisting of paraffin wax, microcrystalline wax, candelilla wax, carnauba wax, polyethylene wax, and combinations thereof.

7. The dual composition hard coated chewing gum of claim

1 or claim 2, wherein the gum base includes a filler component selected from the group consisting of calcium carbonate, magnesium carbonate, talc, dicalcium phosphate, and combinations thereof.

8. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes a softener selected from the group consisting of glycerol monostearate, glycerol triacetate, and combinations thereof.

9. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the layers of the outer coating include at least about 90% polyol, by weight.

10. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the layers of the inner component include from about 50 to 100%, by weight, of at least one polyol selected from the group consisting of lactitol, maltitol and hydrogenated isomaltulose.

11. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the layers of the inner component include at least about 90%, by weight, of at least one polyol selected from the group consisting of lactitol, maltitol and hydrogenated isomaltulose.

12. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the layers of the outer component include from about 50 to 100%, by weight, of erythritol.

13. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the layers of the outer component include at least about 90%, by weight, of erythritol.

14. A dual composition hard coated chewing gum, comprising:

from about 35 to about 90 weight percent of a gum center which includes a gum base, a bulk portion, and one or more flavoring agents; and

from about 10 to about 65 weight percent of a dual composition hard outer coating which includes sequentially added layers, each layer comprising

- (a) from about 50 to 100% lactitol by weight;
- (b) from about 50 to 100% maltitol by weight;
- (c) from about 50 to 100% hydrogenated isomaltulose by weight; or
- (d) from about 50 to 100% erythritol by weight;

the layers constituting an inner component of the outer coating and an outer component of the outer coating;

the layers of the inner component of the outer coating comprising at least one polyol selected from the group consisting of lactitol, maltitol, hydrogenated isomaltulose and erythritol;

the layers of the outer component of the outer coating comprising at least one polyol selected from the group consisting of lactitol, maltitol, hydrogenated isomaltulose and erythritol; and wherein

at least one polyol contained in the outer component of the outer coating is not present in the inner component of the outer coating.

15. The dual composition hard coated chewing gum of claim 14, wherein the bulk portion includes a sugarless sweetener selected from the group consisting of sorbitol, mannitol, xylitol, hydrogenated starch hydrolysates, lactitol, maltitol, erythritol, hydrogenated isomaltulose, and combinations thereof.

16. The dual composition hard coated chewing gum of claim 14, wherein the bulk portion includes a high intensity sweetener selected from the group consisting of sucralose, aspartame, salts of acesulfame, alitame, saccharin and its salts, cyclamic acid and its salts, glycyrrhizin, dihydrochalcones, thaumatin, monellin, and combinations thereof.

17. The dual composition hard coated chewing gum of claim 14, wherein the gum center constitutes from about 50 to about 80 weight percent of the dual composition hard coated chewing gum and the outer coating constitutes from about 20 to about 50 weight percent of the dual

composition hard coated chewing gum.

18. The dual composition hard coated chewing gum of claim 14, wherein the layers of the outer coating each include at least about 90% of at least two polyols selected from the group consisting of lactitol, maltitol, hydrogenated isomaltulose and erythritol.

19. The dual composition hard coated chewing gum of claim 14, wherein the layers of the inner component include at least about 90% lactitol, maltitol or hydrogenated isomaltulose, by weight; and wherein the layers of the outer component include at least about 90% erythritol, by weight.

20. A method of forming a dual composition hard coated chewing gum, comprising the steps of:

(1) forming a gum center including a bulk portion, a chewing gum base portion and one or more flavoring agents;

(2) forming a first polyol liquid coating syrup comprising solvent and from about 50% to the point of saturation of at least one polyol selected from the group consisting of lactitol, maltitol, hydrogenated isomaltulose and erythritol, by weight of the polyol liquid coating syrup;

(3) applying a plurality of coats of the first polyol liquid coating syrup to the gum center;

(4) forming a second polyol liquid coating syrup comprising solvent and from about 50% to the point of saturation of at least one polyol selected from the group consisting of lactitol, maltitol, hydrogenated isomaltulose and erythritol, by weight of the polyol liquid coating syrup, the composition of the second polyol liquid coating syrup containing a different polyol than the composition of the first polyol liquid coating syrup;

(5) applying a plurality of coats of the second polyol liquid coating syrup to the gum center which has been coated with the first polyol; and

(6) evaporating the solvent from each coat of the first and second polyol liquid coating syrups, prior to applying the next coat; wherein

the number of coats applied in steps (3) and (5) being sufficient to provide a coating of from about 10 to about 65 weight percent of the total coated chewing gum product, constituting an inner component of the outer coating and an outer component of the outer coating;

the layers of the inner component of the outer coating comprise at least one polyol selected from the group consisting of lactitol, maltitol, hydrogenated isomaltulose and erythritol;

the layers of the outer component of the outer coating comprise at least one polyol selected from the group consisting of lactitol, maltitol, hydrogenated isomaltulose and erythritol; and wherein

at least one polyol contained in the outer component of the outer coating is not present in the inner component of the outer coating.

21. The method of claim 20, wherein the first and second liquid coating syrups each comprise at least about 30% polyol, by weight of the respective liquid coating syrup.

22. The method of claim 20, wherein the liquid coating syrup further comprises a flavoring agent.

23. The method of claim 20, wherein the liquid coating syrup further comprises a whitener.

24. The method of claim 20, wherein the liquid coating syrup further comprises an artificial sweetener.

25. The method of claim 20, wherein the liquid coating syrup is applied to the chewing gum center by spraying.

26. The method of claim 20, wherein the solvent for the liquid coating syrup comprises water.

27. The method of claim 20, wherein layers of the outer coating include at least two polyols selected from the group consisting of lactitol, maltitol, hydrogenated

isomaltulose and erythritol.

28. The method of one of claims 20-27, wherein layers of polyol coating containing at least one polyol selected from the group consisting of lactitol, maltitol and hydrogenated isomaltulose are applied before layers of coating containing erythritol.

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File: USPT

L16: Entry 22 of 53

US-PAT-NO: 5603970  
DOCUMENT-IDENTIFIER: US 5603970 A

**TITLE:** Chewing gum pellet coated with a hard coating containing erythritol

DATE-ISSUED: February 18, 1997

**INVENTOR INFORMATION:**

| INVENTOR INFORMATION | CITY        | STATE | ZIP CODE | COUNTRY |
|----------------------|-------------|-------|----------|---------|
| NAME                 |             |       |          |         |
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| Broderick; Kevin B.  | Berwyn      | IL    |          |         |
| Meyers; Marc A.      | Naperville  | IL    |          |         |
| Yatka; Robert J.     | Orland Park | IL    |          |         |

US-CL-CURRENT: 426/5; 426/303, 426/548

**CLAIMS:**

We claim:

1. A chewing gum product comprising:
    - a) a gum pellet comprising chewable gum base, a bulk portion and one or more flavoring agents; and
    - b) a hard coating covering said pellet, said coating comprising erythritol.
  2. The chewing gum product of claim 1 wherein the erythritol comprises about 1% to about 100% of the coating.
  3. The chewing gum product of claim 1 wherein the product is non-cariogenic.
  4. The chewing gum product of claim 1 wherein the gum pellet is free of sugars.
  5. The chewing gum product of claim 1 wherein the coating further comprises a sugar or sugar alcohol other than erythritol and the erythritol comprises about 1% to about 20% of the coating.

6. The chewing gum product of claim 1 wherein the hard coating comprises a plurality of layers, one of said layers comprising erythritol and another of said layers being free of erythritol.

7. The chewing gum product of claim 1 wherein the coating further comprises a binder.

8. The chewing gum product of claim 7 wherein the binder comprises gum arabic.

9. The chewing gum product of claim 1 wherein the coating further comprises a whitener.

10. The chewing gum product of claim 1 wherein the coating further comprises a flavoring agent.

11. The chewing gum product of claim 1 wherein the coating comprises about 10% to about 65% of the product.

12. A method of making a hard coated chewing gum product comprising the steps of:

a) forming a gum center comprising chewable gum base, a bulking portion and one or more flavoring agents; and

b) forming on said gum pellet a hard coating comprising erythritol.

13. The method of claim 12 wherein the hard coating is formed by applying a liquid coating comprising erythritol and solvent in a plurality of coats to the gum center and evaporating solvent from each coat prior to applying the next coat.

14. The method of claim 12 wherein the coating further comprises a flavoring agent.

15. The method of claim 12 wherein the coating comprises from about 1% to about 100% erythritol.

16. The method of claim 13 wherein the liquid coating syrup is applied to the chewing gum center by spraying.

17. The method of claim 13 wherein the solvent comprises

water.

18. The method of claim 13 wherein a plurality of different liquid coatings are applied in successive steps so as to build up a plurality of layers of different coatings.

19. The method of claim 18 wherein a first coating liquid, free of erythritol, is used to build up a first layer and a second liquid coating comprising erythritol is applied to form a second layer over said first layer.

20. The method of claim 12 wherein the hard coating comprises from about 10% to about 65% of the product.

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L16: Entry 24 of 53

File: USPT

US-PAT-NO: 5536511

DOCUMENT-IDENTIFIER: US 5536511 A

TITLE: Chewing gum pellet coated with a hard coating containing erythritol and xylitol

DATE-ISSUED: July 16, 1996

## INVENTOR-INFORMATION:

| NAME             | CITY        | STATE | ZIP CODE | COUNTRY |
|------------------|-------------|-------|----------|---------|
| Yatka; Robert J. | Orland Park | IL    |          |         |

US-CL-CURRENT: 426/5; 426/303, 426/305, 426/548, 426/804

## CLAIMS:

We claim:

1. A chewing gum product comprising:
  - a) a gum pellet comprising chewable gum base, a bulking portion and one or more flavoring agents; and
  - b) a hard coating covering said pellet, said coating comprising erythritol and xylitol cocrystallized in the coating.
2. The chewing gum product of claim 1 wherein the erythritol comprises about 5% to about 95% of the coating.
3. The chewing gum product of claim 1 wherein the xylitol comprises about 5% to about 95% of the coating.
4. The chewing gum product of claim 1 wherein the xylitol comprises about 40% to about 80% of the coating.
5. The chewing gum product of claim 1 wherein the erythritol comprises about 20% to about 60% of the coating.
6. The chewing gum product of claim 1 wherein the xylitol comprises about 50% to about 65% of the coating.

7. The chewing gum product of claim 1 wherein the erythritol comprises about 35% to about 50% of the coating.
8. The chewing gum product of claim 1 wherein the coating further comprises a binder.
9. The chewing gum product of claim 8 wherein the binder comprises gum arabic.
10. The chewing gum product of claim 1 wherein the coating further comprises a whitener.
11. The chewing gum product of claim 1 wherein the coating further comprises a flavoring agent.
12. The chewing gum product of claim 1 wherein the coating comprises about 10% to about 65% of the product.
13. A method of making a hard coated chewing gum product comprising the steps of:
  - a) forming a gum center comprising chewable gum base, a bulking portion and one or more flavoring agents; and
  - b) forming on said gum pellet a hard coating comprising erythritol and xylitol cocrystallized in the coating.
14. The method of claim 13 wherein the hard coating is formed by applying a liquid coating comprising erythritol, xylitol and solvent in a plurality of coats to the gum center and evaporating solvent from each coat prior to applying the next coat.
15. The method of claim 14 wherein the liquid coating comprises, on a solids basis, from about 5% to about 95% erythritol and about 5% to about 95% xylitol.
16. The method of claim 14 wherein the liquid coating comprises, on a solids basis, about 20% to about 60% erythritol and about 40% to about 80% xylitol.
17. The method of claim 14 wherein the liquid coating comprises, on a solids basis, about 50% to about 65% xylitol and about 35% to about 50% erythritol.

18. The method of claim 14 wherein the solvent comprises water.

19. The method of claim 14 wherein the liquid coating comprises about 50% to about 85% polyols.

20. The method of claim 13 wherein the hard coating comprises from about 10% to about 65% of the product.

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L16: Entry 25 of 53

File: USPT

US-PAT-NO: 5525360

DOCUMENT-IDENTIFIER: US 5525360 A

TITLE: Chewing gum products using polydextrose

DATE-ISSUED: June 11, 1996

## INVENTOR-INFORMATION:

| NAME               | CITY        | STATE | ZIP CODE | COUNTRY |
|--------------------|-------------|-------|----------|---------|
| Yatka; Robert J.   | Orland Park | IL    |          |         |
| Richey; Lindell C. | Lake Zurich | IL    |          |         |
| Meyers; Marc A.    | Naperville  | IL    |          |         |

US-CL-CURRENT: 426/3; 426/5, 426/548, 426/658

## CLAIMS:

We claim:

1. A chewing gum composition comprising a high-intensity sweetener encapsulated with polydextrose.
2. A chewing gum composition comprising a flavor encapsulated with polydextrose.
3. The chewing gum composition as in any one of claims 1-2 wherein the polydextrose is in the form of polydextrose A, polydextrose K, polydextrose N 70% syrup, polydextrose with reduced citric acid and improved taste and mixtures thereof.
4. A chewing gum product having a rolling compound thereon, the rolling compound comprising polydextrose.
5. The chewing gum product of claim 4 wherein the polydextrose comprises from about 0.5% to 100% of the rolling compound.
6. The chewing gum product of claim 4 wherein the polydextrose comprises from about 0.005% to about 5% of the chewing gum product.

7. A hard-shell coated chewing gum product comprising a gum pellet coated with a hard-shell coating comprising polydextrose.
8. The hard-shell coated chewing gum product of claim 7 wherein the polydextrose comprises about 0.1% to about 20% of the coating.
9. The hard-shell coated chewing gum product of claim 7 wherein the coating further comprises a material selected from the group consisting of sucrose, dextrose, maltose, xylitol, lactitol, palatinit and mixtures thereof.
10. A chewing gum product having a liquid center wherein the liquid center comprises polydextrose.
11. The chewing gum product as in any one of claims 4-11 wherein the polydextrose is in the form of polydextrose A, polydextrose K, polydextrose N 70% syrup, polydextrose with reduced citric acid and improved taste and mixtures thereof.
12. A method of making a hard-shell coated chewing gum product comprising the steps of:
  - a) providing a gum pellet;
  - b) applying a liquid coating syrup to the surface of the gum pellet, the coating syrup comprising polydextrose, and
  - c) solidifying the coating syrup to form a hard-shell coating.
13. The method of claim 12 wherein the coating syrup comprises a solution and the step of solidifying the coating comprises drying the solution.
14. The method of claim 12 wherein the coating syrup is applied in successive layers, with each layer of syrup being dried before application of an additional layer.
15. The method of claim 14 wherein a powdered coating is applied after one or more of the syrup layers is applied.
16. The method of claim 15 wherein the powdered coating

comprises polydextrose, maltodextrin, gelatin, cellulose derivative, starch, modified starch, vegetable gum, filler and mixtures thereof.

17. A method of making chewing gum comprising the steps of:

a) co-drying a solution containing polydextrose and another sweetener selected from the group consisting of sugar sweeteners, alditol sweeteners and high-intensity sweeteners, and

b) mixing the co-dried polydextrose sweetener with gum base and flavoring agents to produce a gum composition.

18. A method of making chewing gum comprising the steps of:

a) co-evaporating an aqueous solution comprising polydextrose and a plasticizing agent to form a syrup, and

b) mixing the syrup with gum base, bulking agents and flavoring agents to produce a gum composition.

19. The method as in any one of claims 11-18 wherein the polydextrose is in the form of polydextrose A, polydextrose K, polydextrose N 70% syrup, polydextrose with reduced citric acid and improved taste and mixtures thereof.

20. The chewing gum composition of claim 1 wherein the polydextrose is in the form of an aqueous syrup.

21. The method of claim 15 wherein the product is non-cariogenic.

21. The method of claim 15 wherein the product is non-cariogenic.

non-carbonate. The product is

### **3. The matching**

22. The method of claim 15 wherein the product is free of polyols.

23. The method of claim 21 wherein the plasticizing agent is selected from the group consisting of glycerin, propylene glycol and mixtures thereof.

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L16: Entry 28 of 53

File: USPT

US-PAT-NO: 5433960

DOCUMENT-IDENTIFIER: US 5433960 A

TITLE: Chewing gum including agent containing edible film

DATE-ISSUED: July 18, 1995

## INVENTOR-INFORMATION:

| NAME         | CITY       | STATE | ZIP CODE | COUNTRY |
|--------------|------------|-------|----------|---------|
| Meyers; Marc | Naperville | IL    |          |         |

US-CL-CURRENT: 426/5; 426/302, 426/306, 426/307, 426/310

## CLAIMS:

I claim:

1. A stick of chewing gum comprising:

a gum body in the shape of a stick

a coating of an edible film that coats the stick of chewing gum, the edible film includes at least one material chosen from the group consisting of: cellulose derivatives; modified starch; maltodextrin; polyols; low calorie bulking agents; dextrin; gelatin; zein; soy proteins; gluten; whey proteins; vegetable gums; edible polymers; edible plastics; shellac; carbohydrates; modified carbohydrates; carbohydrate derivatives; proteins; lipids; pseudolatexes; colloidal dispersion; ethylcellulose emulsion; wax emulsions; and combinations thereof, the coating of edible film having sufficient barrier properties to provide the chewing gum with increased moisture stability at ambient conditions than a chewing gum without the coating of edible film, the edible film including at least one active chewing gum agent.

2. The stick of chewing gum of claim 1 wherein the active chewing gum agent is a sweetener.3. The stick of chewing gum of claim 1 wherein the active

chewing gum agent is a flavor.

4. The stick of chewing gum of claim 1 wherein the active chewing gum agent is a dental agent.

5. The stick of chewing gum of claim 1 wherein the active chewing gum agent is a softener.

6. The stick of chewing gum of claim 1 wherein the active chewing gum agent is a flavor enhancer.

7. The stick of chewing gum of claim 1 wherein the active chewing gum agent is water.

8. The stick of chewing gum of claim 1 wherein the active chewing gum agent is a slip agent.

9. The stick of chewing gum of claim 1 wherein the active agent is an antioxidant.

10. The stick of chewing gum of claim 1 wherein the active chewing gum agent is a color.

11. The stick of chewing gum of claim 1 wherein the chewing gum is a stick gum including a first side and a second side and the edible film is applied to both sides.

12. The stick of chewing gum of claim 1 wherein the coating of edible material includes an edible film forming agent chosen from the group consisting of: cellulose derivatives; modified starch; maltodextrin; polyols; low calorie bulking agents; dextrin; gelatin; zein; soy proteins; gluten; whey proteins; vegetable gums; edible polymers; edible plastics; shellac; and combinations thereof.

13. The stick of chewing gum of claim 1 wherein the coating of edible material comprises:

a first layer of an edible film; and

a second layer of at least one material chosen from the group consisting of: wax, hydrocarbon polymer type waxes, fatty acids, fats, oils, and lipid derivatives.

14. The stick of chewing gum of claim 1 wherein the

coating of edible material is an emulsion including at least two materials chosen from the group consisting of: carbohydrates; modified carbohydrates; carbohydrate derivatives; proteins; and lipids.

15. The stick of chewing gum of claim 1 wherein the coating of edible material includes an emulsion chosen from the group consisting of: pseudolatexes; colloidal dispersions; ethylcellulose emulsion; and wax emulsions.

16. A stick chewing gum comprising:

a gum body in the shape of a stick that includes an insoluble gum base and a water soluble portion;

a coating of an edible film that coats the surface of the gum body, the edible film includes at least one material chosen from the group consisting of: cellulose derivatives; modified starch; maltodextrin; polyols; low calorie bulking agents; dextrin; gelatin; zein; soy proteins; gluten; whey proteins; vegetable gums; edible polymers; edible plastics; shellac; carbohydrates; modified carbohydrates; carbohydrate derivatives; proteins; lipids; pseudolatexes; colloidal dispersion; ethylcellulose emulsion; wax emulsions; and combinations thereof, the coating of edible film coats at least a substantial portion of the gum body and provides sufficient barrier properties to the gum body to provide the stick chewing gum with increased moisture stability at ambient conditions than a chewing gum without the edible film; and

at least one active agent chosen from the group consisting of: sweeteners; flavor; dental agents; softeners; antioxidants; flavor enhancers; water; colors; and slip agents, that is located within the coating of edible film.

17. The stick chewing gum of claim 16 wherein the sweetener is chosen from the group consisting of: Aspartame; alitame; sucralose; salts of acesulfame; saccharine and its salts; cyclamic acid and its salts; glycyrrhizin; dihydrochalcones; thaumatin; and combinations thereof.

18. The stick chewing gum of claim 16 wherein the flavor

is chosen from the group consisting of: citrus oils, light fruit esters, mint oils, clove oil, oil of wintergreen, anise, and artificial flavors.

19. The stick chewing gum of claim 16 wherein the dental agent is chosen from the group consisting of: plaque pH buffers, phosphates, minerals, urea, sodium bicarbonate, calcium glycerophosphate, and remineralizing agents.

20. The stick chewing gum of claim 16 wherein the softener is chosen from the group consisting of: lecithin, glycerol monostearate, triacetin, acetylated monoglycerides, polyol esters, polyglycol esters, fats, oils, and other lipids.

21. The stick chewing gum of claim 16 wherein the slip agent is chosen from the group consisting of: silicones, stearates, high melting point waxes, silicon dioxide, talc, and polymer slip agents.

22. The stick chewing gum of claim 16 wherein the color is chosen from the group consisting of: dyes, lakes, pigments, whitenets, and natural food colorants.

23. A method for manufacturing chewing gum comprising the steps of:

creating a unit of chewing gum in the form of a stick;

coating a surface of the unit of chewing gum with an edible film that includes at least one material chosen from the group consisting of: cellulose derivatives; modified starch; maltodextrin; polyols; low calorie bulking agents; dextrin; gelatin; zein; soy proteins; gluten; whey proteins; vegetable gums; edible polymers; edible plastics; shellac; carbohydrates; modified carbohydrates; carbohydrate derivatives; proteins; lipids; pseudolatexes; colloidal dispersion; ethylcellulose emulsion; wax emulsions; and combinations thereof, the coating of edible film providing barrier properties; and

locating in the coating of edible film at least one active chewing gum agent chosen from the group consisting of: sweeteners; flavor; antioxidants; dental agents; softeners; flavor enhancers; water; colors; and slip

agents.

24. The method of claim 23 wherein the unit is a stick of gum.

25. The method of claim 23 wherein the stick of chewing gum includes a first and second side and the first and second sides are both coated with the edible film.

26. The method of claim 23 wherein the active agent is present in the film on only a first or a second side of the chewing gum stick.

27. A method for segregating in a chewing gum ingredients comprising the steps of:

creating a chewing gum structure that has a stick shape; and

coating a surface of the chewing gum structure with a coating of an edible film that includes one or more ingredients that interact with one or more ingredients located in the chewing gum structure, the edible film also including at least one material chosen from the group consisting of: cellulose derivatives; modified starch; maltodextrin; polyols; low calorie bulking agents; dextrin; gelatin; zein; soy proteins; gluten; whey proteins; vegetable gums; edible polymers; edible plastics; shellac; carbohydrates; modified carbohydrates; carbohydrate derivatives; proteins; lipids; pseudolatexes; colloidal dispersion; ethylcellulose emulsion; wax emulsions; and combinations thereof.

28. A method for providing improved processability to a chewing gum composition comprising the steps of:

creating a unit of chewing gum having a stick shape; and

coating a surface of the stick shape with a coating of edible film that includes a slip agent and least one material chosen from the group consisting of: cellulose derivatives; modified starch; maltodextrin; polyols; low calorie bulking agents; dextrin; gelatin; zein; soy proteins; gluten; whey proteins; vegetable gums; edible polymers; edible plastics; shellac; carbohydrates; modified carbohydrates; carbohydrate derivatives; modified

proteins; lipids; pseudolatexes; colloidal dispersion; ethylcellulose emulsion; wax emulsions; and combinations thereof.

29. The method for providing of claim 28 wherein the slip agent is chosen from the group consisting of: silicones, stearates, high melting point waxes, silicon dioxide, talc, and polymer slip agents.

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L16: Entry 31 of 53

File: USPT

US-PAT-NO: 5409715

DOCUMENT-IDENTIFIER: US 5409715 A

TITLE: Use of edible film to prolong chewing gum shelf life

DATE-ISSUED: April 25, 1995

## INVENTOR-INFORMATION:

| NAME         | CITY       | STATE | ZIP CODE | COUNTRY |
|--------------|------------|-------|----------|---------|
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US-CL-CURRENT: 426/5; 426/138, 426/302

## CLAIMS:

I claim:

1. A method of preparing coated chewing gum sticks with improved shelf life, comprising the steps of:

preparing a chewing gum composition including a water soluble bulk portion, a water insoluble chewing gum base portion, and one or more flavoring agents;

forming the chewing gum composition into a sheet having first and second sides;

applying a coating of an edible film forming agent to the first and second sides of the sheet;

applying a coating of a second material chosen from the group consisting of wax, fats, fatty acids, oils, and lipid derivatives over the coating of edible film forming agent; and

cutting the sheet into chewing gum sticks.

2. The method of claim 1 wherein the coating of edible film forming agent is applied to the first side of the sheet and the second material is applied to the first side before the edible film forming agent is applied to the second side.

3. The method of claim 1 including the step of cutting the sheet into chewing gum sticks after the second material is applied.

4. The method of claim 1 wherein the coating of edible material includes an edible film forming agent chosen from the group consisting of: cellulose derivatives; modified starch; dextrin; gelatin; zein; vegetable gums; proteins; edible polymers; edible plastic film; maltodextrins; low calorie carbohydrate bulking agents; shellac; and combinations thereof.

5. The method of claim 1 wherein the edible material is applied by spraying the edible material on the sheet.

6. The method of claim 1 wherein the edible material is applied by using a roller to coat the edible material onto the sheet.

7. The method of claim 1 wherein the edible material is applied by coextruding the edible material onto the sheet.

8. A method for preparing coated chewing gum sticks having improved shelf life comprising the steps of:

preparing a stick of chewing gum that includes a coating of an edible material that provides sufficient vapor barrier properties to provide the stick of chewing gum with a more stable moisture content, under ambient conditions, than a stick of chewing gum that does not include the coating.

9. The method of claim 8 wherein the coating of edible material includes an edible film forming agent chosen from the group consisting of: cellulose derivatives; modified starch; dextrin; gelatin; zein; vegetable gums; proteins; edible polymers; edible plastic film; maltodextrins; polyols; low calorie carbohydrate bulking agents; shellac; and combinations thereof.

10. The method of claim 8 wherein the coating of edible material includes a component chosen from the group consisting of: wax, fatty acids, fats, oils, and lipid derivatives.

11. The method of claim 8 wherein the coating of edible material comprises:

a first layer of an edible film forming agent; and

a second layer of a material chosen from the group consisting of: wax, lipids, fatty acids, fats, and oils.

12. The method of claim 8 wherein the coating of edible material is an emulsion including at least two materials chosen from the group consisting of: carbohydrates; modified carbohydrates; carbohydrate derivatives; proteins; and lipids.

13. The method of claim 12 wherein the coating of edible material includes an emulsion chosen from the group consisting of: pseudolatexes; colloidal dispersions; ethylcellulose emulsions; and wax emulsions.

14. The method of claim 8 wherein the stick of chewing gum includes a first side and a second side and the coating of edible material is applied to each of the first and second sides.

15. The method of claim 8 wherein the edible material is applied by spraying the edible material onto the sheet.

16. The method of claim 8 wherein the edible material is applied by using a roller to coat the edible material onto the sheet.

17. The method of claim 8 wherein the edible material is applied by coextruding the edible material onto the sheet.

18. A chewing gum stick comprising:

a chewing gum composition including a water soluble bulk portion, a water insoluble chewing gum base portion, and one or more flavoring agents formed into a chewing gum stick; and

the chewing gum stick including a coating, that coats an entire outer surface of the chewing gum stick, including an edible material and a second material chosen from the

group consisting of wax, fatty acids, fats, oils, and lipid derivatives.

19. The chewing gum of claim 18 wherein the edible material includes an edible film forming agent chosen from the group consisting of: cellulose derivatives; modified starch; dextrin; gelatin; zein; vegetable gums; proteins; edible polymers; edible plastic film; maltodextrins; polyols; low calorie carbohydrate bulking agents; shellac; and combinations thereof.

20. The chewing gum of claim 18 wherein the coating of edible material includes an emulsion chosen from the group consisting of: pseudolatexes; colloidal dispersions; ethylcellulose emulsions; and wax emulsions.

21. The chewing gum of claim 18 wherein the coating is a multilayer coating.

22. The chewing gum of claim 21 wherein the multilayer coating includes a first layer of the edible film and a second layer of the second material.

23. A coated chewing gum stick having improved shelf life comprising:

a stick of chewing gum that includes a coating of an edible material that coats an entire outer surface of the stick of chewing gum and provides sufficient vapor barrier properties to provide the stick of chewing gum with a more stable moisture content, under ambient conditions, than a stick of chewing gum that does not include the coating.

24. The chewing gum of claim 23 wherein the coating of edible material includes an edible film forming agent chosen from the group consisting of: cellulose derivatives; modified starch; dextrin; gelatin; zein; vegetable gums; proteins; edible polymers; edible plastic film; maltodextrins; polyols; low calorie carbohydrate bulking agents; shellac; and combinations thereof.

25. The chewing gum of claim 23 wherein the coating of edible material includes a component chosen from the group consisting of: wax, fatty acids, fats, oils, and lipid derivatives.

26. The chewing gum of claim 23 wherein the coating of edible material comprises:

a first layer of an edible film forming agent; and

a second layer of a material chosen from the group consisting of: wax, lipids, fatty acids, fats, and oils.

27. The chewing gum of claim 23 wherein the coating of edible material includes an emulsion chosen from the group consisting of: vegetable wax emulsions; ethylcellulose emulsions; and petrolite wax emulsions.

**WEST**  

L16: Entry 32 of 53

File: USPT

US-PAT-NO: 5376389

DOCUMENT-IDENTIFIER: US 5376389 A

TITLE: Hard coated chewing gum with improved shelf life, with xylitol and polyol coatings

DATE-ISSUED: December 27, 1994

## INVENTOR-INFORMATION:

| NAME               | CITY          | STATE | ZIP CODE | COUNTRY |
|--------------------|---------------|-------|----------|---------|
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US-CL-CURRENT: 426/5; 426/302, 426/306

## CLAIMS:

We claim:

1. A dual composition hard coated chewing gum, comprising:

from about 35 to about 90 weight percent of a gum center, including a bulk portion, a chewing gum base and one or more flavoring agents; and

from about 10 to about 65 weight percent of an outer coating containing from about 50 to about 100%, by weight, of xylitol and non-xylitol polyol, which comprises at least two sequential layers of from about 50 to about 100%, by weight, of xylitol and from about 50 to about 100%, by weight, of non-xylitol polyol.

2. A dual composition hard coated chewing gum according to claim 1, wherein the layers of non-xylitol polyol are applied before the layers of xylitol.

3. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes an elastomer selected from the group consisting of polyisobutylene, isobutylene-isoprene copolymer, styrene butadiene rubber,

natural latexes, and combinations thereof.

4. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes a resin selected from the group consisting of polyvinyl acetate, terpene resins, ester gums, and combinations thereof.

5. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes fats and oils selected from the group consisting of animal fats, vegetable oils, hydrogenated vegetable oils, partially hydrogenated vegetable oils, cocoa butter, and combinations thereof.

6. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes a wax selected from the group consisting of paraffin wax, microcrystalline wax, candelilla, carnauba, polyethylene wax, and combinations thereof.

7. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes a filler component selected from the group consisting of calcium carbonate, magnesium carbonate, talc, dicalcium phosphate, and combinations thereof.

8. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes a softener selected from the group consisting of glycerol monostearate, glycerol triacetate, and combinations thereof.

9. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein layers of the hard outer coating include from about 50 to about 100% xylitol, by weight.

10. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein layers of the hard outer coating include from about 50 to about 100% of a non-xylitol polyol, by weight.

11. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein layers of the hard outer coating include from about 50 to about 100% of a non-xylitol polyol, by weight, selected from the group consisting of lactitol, maltitol and sorbitol.

12. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein layers of the hard outer coating include at least about 90% xylitol, by weight.

13. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein layers of the hard outer coating include at least about 90% of a non-xylitol polyol, by weight.

14. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein layers of the hard outer coating include at least about 90% of a non-xylitol polyol, by weight, selected from the group consisting of lactitol, maltitol and sorbitol.

15. A dual composition hard coated chewing gum, comprising:

from about 35 to about 90 weight percent of a gum center which includes a gum base, a bulk portion, and one or more flavoring agents; and

from about 10 to about 65 weight percent of a dual composition hard outer coating which includes sequentially added layers, each layer comprising

(a) from about 50 to about 100% xylitol by weight; or

(b) from about 50 to about 100% non-xylitol polyol by weight.

16. The dual composition hard coated chewing gum of claim 15, wherein the bulk portion includes a sugarless sweetener selected from the group consisting of sorbitol, mannitol, xylitol, hydrogenated starch hydrolysates, lactitol, maltitol, hydrogenated isomaltulose, and combinations thereof.

17. The dual composition hard coated chewing gum of claim 15, wherein the bulk portion includes a high intensity sweetener selected from the group consisting of sucralose, aspartame, salts of acesulfame, alitame, saccharin and its salts, cyclamic acid and its salts, glycyrrhizin, dihydrochalcones, thaumatin, monellin, and combinations thereof.

18. The dual composition hard coated chewing gum of claim 15, wherein the gum center constitutes from about 50 to about 80 weight percent of the dual composition hard coated chewing gum and the outer coating constitutes from about 20 to about 50 weight percent of the dual composition hard coated chewing gum.

19. The dual composition hard coated chewing gum of claim 15, wherein layers of the hard outer coating include at least about 90% xylitol, by weight.

20. The dual composition hard coated chewing gum of claim 15, wherein layers of the hard outer coating include at least about 90% of a non-xylitol polyol, by weight, selected from the group consisting of lactitol, maltitol and sorbitol.

21. A method of forming a dual composition hard coated chewing gum, comprising the steps of:

(1) forming a gum center including a bulk portion, a chewing gum base portion, and one or more flavoring agents;

(2) forming a non-xylitol polyol liquid coating syrup comprising solvent and from about 50 to about 80% non-xylitol polyol, by weight of the non-xylitol polyol liquid coating syrup;

(3) applying a plurality of coats of the non-xylitol polyol liquid coating syrup to the gum center;

(4) forming a xylitol liquid coating syrup comprising solvent and from about 50 to about 85% xylitol, by weight of the xylitol liquid coating syrup;

(5) applying a plurality of coats of the xylitol liquid coating syrup to the non-xylitol polyol-coated gum center; and

(6) evaporating the solvent from each coat of the xylitol and non-xylitol polyol liquid coating syrups, prior to applying the next coat;

the number of coats applied in steps (3) and (5) being

sufficient to provide a coating constituting of from about 10 to about 65 weight percent of the total coated chewing gum product.

22. The method of claim 21, wherein the xylitol liquid coating syrup comprises at least about 30% xylitol, by weight of the xylitol liquid coating syrup.

23. The method of claim 21, wherein the non-xylitol polyol liquid coating syrup comprises at least about 30% non-xylitol polyol, by weight of the non-xylitol polyol liquid coating syrup.

24. The method of claim 21, wherein the liquid coating syrup further comprises a flavoring agent.

25. The method of claim 21, wherein the liquid coating syrup further comprises a whitener.

26. The method of claim 21, wherein the liquid coating syrup further comprises an artificial sweetener.

27. The method of claim 21, wherein the liquid coating syrup is applied to the chewing gum center by spraying.

28. The method of claim 21, wherein the solvent for the liquid coating syrup comprises water.

29. The method of claim 21, wherein layers of the hard outer coating include a non-xylitol polyol selected from the group consisting of lactitol, maltitol and sorbitol.

30. The method of one of claims 21-29, wherein the layers of non-xylitol polyol coating are applied before the layers of xylitol coating.

31. The method of claim 21, wherein the gum center is coated, in step (3), with a combination of sorbitol and hydrogenated starch hydrolyzate or a combination of polyols to obtain a soft inner coating; and wherein the soft inner coating is coated, in step (5), with a hard shell xylitol coating.

**WEST**  

L16: Entry 35 of 53

File: USPT

US-PAT-NO: 5298263

DOCUMENT-IDENTIFIER: US 5298263 A

TITLE: Chewing gum coated with palatinose or palatinose oligosaccharide

DATE-ISSUED: March 29, 1994

## INVENTOR-INFORMATION:

| NAME               | CITY        | STATE | ZIP CODE | COUNTRY |
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US-CL-CURRENT: 426/5; 426/302, 426/548, 426/658, 426/804

## CLAIMS:

We claim:

1. A coated chewing gum product comprising a gum pellet coated with a coating comprising palatinose, palatinose oligosaccharide or mixture thereof.
2. The coated chewing gum product of claim 1 wherein the palatinose, palatinose oligosaccharide or mixture thereof comprises about 1% to about 100% of the coating.
3. The coated chewing gum product of claim 1 wherein the coating comprises a hard shell coating.
4. The coated chewing gum product of claim 1 wherein the gum pellet is sweetened at least in part with palatinose or palatinose oligosaccharide.
5. The coated chewing gum product of claim 1 wherein the gum pellet is non-cariogenic.
6. The coated chewing gum product of claim 1 wherein both the coating and gum pellet are non-cariogenic.
7. A method of making a coated chewing gum product comprising the steps of:

- a) providing a gum pellet,
- b) applying a liquid coating syrup to the surface of the gum pellet, the coating syrup comprising palatinose, palatinose oligosaccharide or mixture thereof, and
- c) solidifying the coating syrup.

8. The method of claim 7 wherein the coating syrup comprises a solution and the step of solidifying the coating comprises drying the solution.

9. The method of claim 7 wherein the coating syrup is applied in successive layers, with each layer of syrup being dried before application of an additional layer.

10. The method of claim 9 wherein a powdered coating is applied after one or more of the syrup layers is applied.

11. The method of claim 10 wherein the powdered coating comprises palatinose, palatinose oligosaccharide, gelatin, a cellulose derivative, starch, modified starch, vegetable gum, filler or mixture thereof.

12. The method of claim 7 wherein the coating syrup further comprises a starch.

13. The method of claim 7 wherein the coating syrup is solidified to form a hard shell coating.

14. The method of claim 7 wherein the coating comprises palatinose at a level of greater than 50% of the coating.

15. The method of claim 7 wherein the coating comprises about 1% to about 20% palatinose oligosaccharide.

16. The method of claim 10 wherein the powdered coating comprises 100% palatinose.

17. The method of claim 7 wherein the gum pellet is sweetened at least in part with palatinose or palatinose oligosaccharide.

18. The method of claim 7 wherein the gum pellet is non-cariogenic.

19. The method of claim 7 wherein both the coating and the gum pellet are non-cariogenic.

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L16: Entry 37 of 53

File: USPT

US-PAT-NO: 5270061

DOCUMENT-IDENTIFIER: US 5270061 A

TITLE: Dual composition hard coated gum with improved shelf life

DATE-ISSUED: December 14, 1993

## INVENTOR-INFORMATION:

| NAME             | CITY     | STATE | ZIP CODE | COUNTRY |
|------------------|----------|-------|----------|---------|
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US-CL-CURRENT: 426/5; 426/303, 426/548, 426/804

## CLAIMS:

We claim:

1. A dual composition hard coated chewing gum, comprising:

from about 35 to about 90 weight percent of a gum center, including a bulk portion, a chewing gum base and one or more flavoring agents; and

from about 10 to about 65 weight percent of an outer coating containing from about 50 to about 100%, by weight, of xylitol and hydrogenated isomaltulose, including

(a) an inner coating component which includes from about 50 to about 100%, by weight, of xylitol, and

(b) an outer coating component which includes from about 50 to about 100%, by weight of hydrogenated isomaltulose.

2. A dual composition hard coated chewing gum, comprising:

from about 35 to about 90 weight percent of a gum center, including a bulk portion, a chewing gum base and one or more flavoring agents; and

from about 10 to about 65 weight percent of an outer coating containing from about 50 to about 100%, by weight, of xylitol and hydrogenated isomaltulose, which comprises at least two sequential layers of from about 50 to about 100%, by weight, of xylitol and from about 50 to about 100%, by weight, of hydrogenated isomaltulose.

3. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes an elastomer selected from the group consisting of polyisobutylene, isobutylene-isoprene copolymer, styrene butadiene rubber, natural latexes, and combinations thereof.
4. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes a resin selected from the group consisting of polyvinyl acetate, terpene resins, ester gums, and combinations thereof.
5. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes fats and oils selected from the group consisting of animal fats, vegetable oils, hydrogenated vegetable oils, partially hydrogenated vegetable oils, cocoa butter, and combinations thereof.
6. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes a wax selected from the group consisting of paraffin wax, microcrystalline wax, candelilla, carnauba, polyethylene wax, and combinations thereof.
7. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes a filler component selected from the group consisting of calcium carbonate, magnesium carbonate, talc, dicalcium phosphate, and combinations thereof.
8. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein the gum base includes a softener selected from the group consisting of glycerol monostearate, glycerol triacetate, and combinations thereof.
9. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein layers of the hard outer coating

include from about 50 to about 100% xylitol, by weight.

10. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein layers of the hard outer coating include from about 50 to about 100% hydrogenated isomaltulose, by weight.

11. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein layers of the hard outer coating include at least about 90% xylitol, by weight.

12. The dual composition hard coated chewing gum of claim 1 or claim 2, wherein layers of the hard outer coating include at least about 90% hydrogenated isomaltulose, by weight.

13. A dual composition hard coated chewing gum, comprising:

from about 35 to about 90 weight percent of a gum center, including a bulk portion, a chewing gum base and one or more flavoring agents; and

from about 10 to about 65 weight percent of a dual composition hard outer coating which includes sequentially added layers, each layer comprising

(a) from about 50 to about 100% xylitol by weight; or

(b) from about 50 to about 100% hydrogenated isomaltulose by weight.

14. The dual composition hard coated chewing gum of claim 13, wherein the bulk portion includes a sugarless sweetener selected from the group consisting of sorbitol, mannitol, xylitol, hydrogenated starch hydrolysates, maltitol, hydrogenated isomaltulose, and combinations thereof.

15. The dual composition hard coated chewing gum of claim 13, wherein the bulk portion includes a high intensity sweetener selected from the group consisting of sucralose, aspartame, salts of acesulfame, alitame, saccharin and its salts, cyclamic acid and its salts, glycyrrhizin, dihydrochalcones, thaumatin, monellin, and combinations thereof.

16. The dual composition hard coated chewing gum of claim 13, wherein the gum center constitutes from about 50 to about 80 weight percent of the dual composition hard coated chewing gum and the outer coating constitutes from about 20 to about 50 weight percent of the dual composition hard coated chewing gum.

17. The dual composition hard coated chewing gum of claim 13, wherein layers of the hard outer coating include at least about 90% xylitol, by weight.

18. The dual composition hard coated chewing gum of claim 13, wherein layers of the hard outer coating include at least about 90% hydrogenated isomaltulose, by weight.

19. A method of forming a dual composition hard coated chewing gum, comprising the steps of:

(1) forming a gum center including a bulk portion, a chewing gum base portion, and one or more flavoring agents;

(2) forming a xylitol liquid coating syrup comprising solvent and from about 50 to about 85% xylitol, by weight of the xylitol liquid coating syrup;

(3) applying a plurality of coats of the xylitol liquid coating syrup to the gum center; and

(4) forming a hydrogenated isomaltulose liquid coating syrup comprising solvent and from about 50 to about 80% hydrogenated isomaltulose, by weight of the hydrogenated isomaltulose liquid coating syrup;

(5) applying a plurality of coats of the hydrogenated isomaltulose liquid coating syrup to the xylitol-coated gum center; and

(6) evaporating the solvent from each coat of the xylitol and hydrogenated isomaltulose liquid coating syrups, prior to applying the next coat;

the number of coats applied in steps (3) and (5) being sufficient to provide a coating constituting of from about 10 to about 65 weight percent of the total coated

chewing gum product.

20. The method of claim 19, wherein the xylitol liquid coating syrup comprises at least about 30% xylitol, by weight of the xylitol liquid coating syrup.

21. The method of claim 19, wherein the hydrogenated isomaltulose liquid coating syrup comprises at least about 30% hydrogenated isomaltulose, by weight of the hydrogenated isomaltulose liquid coating syrup.

22. The method of claim 19, wherein the liquid coating syrup further comprises a flavoring agent.

23. The method of claim 19, wherein the liquid coating syrup further comprises a whitener.

24. The method of claim 19, wherein the liquid coating syrup further comprises an artificial sweetener.

25. The method of claim 19, wherein the liquid coating syrup is applied to the chewing gum center by spraying.

26. The method of claim 19, wherein the layers of xylitol coating are applied before the layers of hydrogenated isomaltulose coating.

27. The method of claim 19, wherein the solvent for the liquid coating syrup comprises water.

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L16: Entry 38 of 53

File: USPT

US-PAT-NO: 5248508

DOCUMENT-IDENTIFIER: US 5248508 A

TITLE: Hard coated gum with improved shelf life

DATE-ISSUED: September 28, 1993

## INVENTOR-INFORMATION:

| NAME             | CITY        | STATE | ZIP CODE | COUNTRY |
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US-CL-CURRENT: 426/5; 426/302, 426/658

## CLAIMS:

We claim:

1. A hard coated chewing gum, comprising:

about 25-90 weight percent of a chewing gum center including 5-90 percent of a bulk sweetener, 5-95 percent of a chewing gum base, 0.1-15 percent of one or more flavoring agents, and 8.5-15 percent of a softener, by weight of the gum center; and

about 10-75 weight percent of a hard outer coating including hydrogenated isomaltulose;

the softener comprising an aqueous sweetener solution;

the gum center including at least 2.5 percent water by weight of the gum center and not more than about 3.0 percent glycerin by weight of the gum center.

2. The hard coated chewing gum of claim 1, wherein the softener comprises an aqueous sorbitol solution.

3. The hard coated chewing gum of claim 2, wherein the aqueous sorbitol solution comprises about 70 weight percent sorbitol and about 30 weight percent water.

4. The hard coated chewing gum of claim 1, wherein the softener constitutes about 10 weight percent of the gum center.

5. The hard coated chewing gum of claim 1, wherein the gum base includes an elastomer selected from the group consisting of polyisobutylene, isobutylene-isoprene copolymer, styrene butadiene rubber, natural latexes, and combinations thereof.

6. The hard coated chewing gum of claim 1, wherein the gum base includes a resin selected from the group consisting of polyvinyl acetate, terpene resins, ester gums, and combinations thereof.

7. The hard coated chewing gum of claim 1, wherein the gum base includes fats and oils selected from the group consisting of animal fats, vegetable oils, hydrogenated vegetable oils, partially hydrogenated vegetable oils, cocoa butter, and combinations thereof.

8. The hard coated chewing gum of claim 1, wherein the gum base includes a wax selected from the group consisting of paraffin wax, microcrystalline wax, candelilla, carnauba, polyethylene wax, and combinations thereof.

9. The hard coated chewing gum of claim 1, wherein the gum base includes a filler component selected from the group consisting of calcium carbonate, magnesium carbonate, talc, dicalcium phosphate, and combinations thereof.

10. The hard coated chewing gum of claim 1, wherein the gum base includes a softener selected from the group consisting of glycerol monostearate, glycerol triacetate, and combinations thereof.

11. The hard coated chewing gum of claim 1, wherein the outer coating comprises from about 50 to about 100% hydrogenated isomaltulose by weight of the outer coating.

12. The hard coated chewing gum of claim 1, wherein the outer coating comprises at least about 90% hydrogenated isomaltulose by weight of the outer coating.

13. A hard coated chewing gum, comprising:

about 25 to about 90 weight percent of a gum center which includes 5-95 percent of a gum base, 5-90 percent of a bulk sweetener, 0.1-15 percent of one or more flavoring agents, and 8.5-15 percent of a softener, by weight of the gum center; and

about 10 to about 75 weight percent of a hard outer coating which includes about 50 to about 100 percent hydrogenated isomaltulose by weight of the outer coating;

the gum center including at least 2.5 percent water by weight of the gum center, and not more than about 3.0 percent glycerin by weight of the gum center.

14. The hard coated chewing gum of claim 13, wherein the softener comprises a mixture of water and a sweetener selected from the group consisting of sorbitol, hydrogenated starch hydrolysates, syrups of xylitol, maltitol, hydrogenated isomaltulose and other polyols, corn syrup, and combinations thereof.

15. The hard coated chewing gum of claim 13, wherein the softener comprises a mixture of water and sorbitol.

16. The hard coated chewing gum of claim 13, wherein the gum center includes a bulk sweetener selected from the group consisting of sorbitol, mannitol, xylitol, hydrogenated starch hydrolysates, maltitol, hydrogenated isomaltulose, and combinations thereof.

17. The hard coated chewing gum of claim 13, wherein the gum center further includes a high intensity sweetener selected from the group consisting of sucralose, aspartame, salts of acesulfame, alitame, saccharin and its salts, cyclamic acid and its salts, glycyrrhizin, dihydrochacones, thaumatin, monellin, and combinations thereof.

18. The hard coated chewing gum of claim 13, wherein the gum center constitutes about 50 to about 80 weight percent of the hard coated chewing gum and the outer coating constitutes about 20 to about 50 weight percent of the hard coated chewing gum.

19. The hard coated chewing gum of claim 13, wherein the hard outer coating includes at least about 90% hydrogenated isomaltulose by weight of the outer coating.

20. The hard coated chewing gum of claim 13, wherein the gum center contains no glycerin.

21. A method of forming a hard coated chewing gum, comprising the steps of:

forming a gum center including 5-90 percent of a bulk sweetener, 5-95 percent of a chewing gum base, 0.1-15 percent of one or more flavoring agents, and 8.5-15 percent of a softener, by weight of the gum center, the gum center containing at least 2.5 percent water by weight of the gum center and not more than 3.0 percent glycerin by weight of the gum center;

forming a liquid coating syrup comprising hydrogenated isomaltulose and about 25 to about 70 percent solvent by weight of the coating syrup;

applying the liquid coating syrup to the gum center; and evaporating the solvent from the liquid coating syrup.

22. The method of claim 21, wherein the solvent for the liquid coating syrup comprises water.

23. The method of claim 21, wherein the liquid coating syrup comprises at least about 30% hydrogenated isomaltulose by weight of the liquid coating syrup.

24. The method of claim 21, wherein the liquid coating syrup further comprises a flavoring agent.

25. The method of claim 21, wherein the liquid coating syrup further comprises a whitener.

26. The method of claim 21, wherein the liquid coating syrup further comprises an artificial sweetener.

27. The method of claim 21, wherein the liquid coating syrup is applied to the chewing gum center by spraying.

28. The method of claim 21, further comprising the steps

of applying a plurality of coatings of liquid syrup to the gum center, and drying the plurality of coatings.

**WEST**  

L16: Entry 51 of 53

File: USPT

US-PAT-NO: 4792453

DOCUMENT-IDENTIFIER: US 4792453 A

TITLE: Hard coated sugarless chewing gum

DATE-ISSUED: December 20, 1988

## INVENTOR-INFORMATION:

| NAME              | CITY           | STATE | ZIP CODE | COUNTRY |
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US-CL-CURRENT: 426/5; 426/302, 426/303, 426/548, 426/658, 426/660, 426/804

## CLAIMS:

We claim:

1. A hard coated sugarless chewing gum comprising a sugarless chewing gum center and a sugarless hard coating comprising hydrogenated isomaltulose, said gum center having a water content of less than about 2.5 weight percent based on the weight of the gum center.
2. The gum of claim 1 wherein the coating comprises hydrogenated isomaltulose and other coating ingredients and the hydrogenated isomaltulose constitutes greater than about 50 weight percent of the coating.
3. The gum of claim 1 wherein the coating comprises hydrogenated isomaltulose and other coating ingredients and the hydrogenated isomaltulose constitutes greater than 90 weight percent of the coating.
4. The gum of claim 1 wherein the coating further contains a flavoring agent.
5. The gum of claim 1 wherein the coating further contains an artificial sweetener.
6. The gum of claim 1 wherein the coating further

contains a dispersing agent.

7. The gum of claim 6 wherein the dispersing agent comprises titanium dioxide.

8. The gum of claim 1 wherein the coating constitutes about 10 to about 75 weight percent of the coated chewing gum.

9. The gum of claim 1 wherein the chewing gum center has a water content of less than about 1.5 weight percent.

10. The gum of claim 1 wherein the chewing gum center has a water content of less than about 1.0 weight percent.

11. The gum of claim 1 wherein the chewing gum center comprises an insoluble gum base.

12. The gum of claim 1 wherein the insoluble gum base constitutes between about 5 to about 95 weight percent of the chewing gum center.

13. The gum of claim 1 wherein the chewing gum center further comprises a bulking agent.

14. The gum of claim 13 wherein the bulking agent constitutes between about 5 to about 95 weight percent of the chewing gum center.

15. The gum of claim 13 wherein the bulking agent comprises a sweetener.

16. The gum of claim 13 wherein the bulking agent comprises sorbitol, mannitol, hydrogenated isomaltulose, xylitol, maltitol, hydrogenated starch hydrolysate, or combinations thereof.

17. The gum of claim 15 wherein the sweetener comprises sorbitol.

18. The gum of claim 1 wherein the gum center further comprises a softener.

19. The gum of claim 18 wherein the softener constitutes between about 0.5 to about 15.0 weight percent of the chewing gum center.

20. The gum of claim 18 wherein the softener comprises glycerine.

21. The gum of claim 18 wherein the softener comprises an aqueous sweetener solution.

22. The gum of claim 21 wherein the aqueous solution comprises sorbitol, hydrogenated starch, hydrolysates, corn syrup, or combinations thereof.

23. The gum of claim 18 wherein the softener contains less than about 30 weight percent water.

24. The gum of claim 1 wherein the chewing gum center further comprises a flavoring agent.

25. The gum of claim 1 wherein the chewing gum center further comprises an artificial sweetener.

26. A sugarless hard coated chewing gum comprising a sugarless chewing gum center and a sugarless hard coating containing hydrogenated isomaltulose, said gum center comprising in admixture an insoluble gum base, a bulking agent and a softener, said softener having a water content less than about 30 weight percent.

27. The gum of claim 26 wherein said softener comprises glycerine, sorbitol, glycerols, glycerides, lecithin, vegetable oils, aqueous sweetener solutions or combinations thereof.

28. A method of manufacturing a sugarless hard coated chewing gum which comprises applying to a sugarless chewing gum center which has a water content of less than about 2.5 weight percent a sugarless syrup comprising hydrogenated isomaltulose to obtain a coated gum center and drying the coated gum center under drying conditions to form said sugarless hard coated chewing gum.

29. The method of claim 28 wherein the syrup temperature is between about 100.degree. to about 200.degree. F.

30. The method of claim 28 wherein the syrup composition comprises between about 60 to about 75 weight percent hydrogenated isomaltulose.

31. The method of claim 28 wherein the syrup composition further comprises a dispersing agent.
32. The method of claim 28 wherein the syrup composition further comprises an artificial sweetener.
33. The method of claim 28 wherein the syrup composition further comprises a flavoring agent.
34. The method of claim 28 wherein the syrup is applied by spraying.
35. The method of claim 28 wherein the coated gum is dried in forced air at a temperature range of about 90.degree. F. to about 150.degree. F.
36. The method of claim 35 wherein the drying air has a relative humidity of less than about 15 percent.
37. The method of claim 35 wherein the drying conditions include an air flow rate of about 2800 ft.sup.3 /min.
38. The method of claim 28 further comprising applying a flavoring agent to the coated chewing gum.
39. The method of claim 35 further comprising applying a flavoring agent to the coated chewing gum and the agent is dried in the absence of forced air.
40. The method of claim 28 wherein a plurality of coatings are applied to the chewing gum center.
41. The method of claim 40 wherein about 30 to about 60 coats are applied.
42. The method of claim 40 wherein a flavoring agent is applied during at least two of the plurality of coatings.
43. The method of claim 28 wherein the coating is applied to the chewing gum center in an amount sufficient to constitute about 10 to about 75 weight percent of the coated chewing gum.
44. The method of claim 28 wherein the chewing gum center comprise an insoluble gum base.

45. The method of claim 28 wherein the chewing gum center comprises sorbitol, mannitol, isomalt, xylitol, maltitol, sucralose, hydrogenated starch hydrolysates, or combinations thereof.

46. The method of claim 28 wherein the chewing gum center comprises glycerine.

47. The method of claim 28 wherein the chewing gum center comprises a flavoring agent.

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L17: Entry 1 of 7

File: USPT

US-PAT-NO: 6355265

DOCUMENT-IDENTIFIER: US 6355265 B1

TITLE: Over-coated chewing gum formulations

DATE-ISSUED: March 12, 2002

## INVENTOR-INFORMATION:

| NAME                    | CITY        | STATE | ZIP CODE | COUNTRY |
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US-CL-CURRENT: 424/440; 424/464, 424/48

## CLAIMS:

We claim:

1. A chewing gum comprising:

a gum center comprising a water soluble portion and a water insoluble portion; and

a coating comprising a medicament that surrounds the gum center, the coating comprising at least 50% by weight of the chewing gum product.

2. The chewing gum of claim 1 wherein the medicament is selected from the group consisting of analgesics, muscle relaxants, antibiotics, antivirals, stimulants, antihistamines, decongestants, anti-inflammatories, antacids, psychotherapeutic agents, insulin, vitamins, minerals, and cardiovascular agents.

3. The chewing gum of claim 1 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

4. The chewing gum of claim 3 wherein the taste masking agent is selected from the group consisting of zinc

gluconate, ethyl maltol, glycine, acesulfame-k, aspartame, saccharin, fructose, xylitol, isomalt, maltitol, spray dried licorice root, glycrrhizine, sodium gluconate, glucono delta-lactone, ethyl vanillin, dextrose, sucralose, vanillin, and ethyl maltol.

5. The chewing gum of claim 3 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

6. The chewing gum of claim 1 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener selected from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

7. The chewing gum of claim 1 wherein the gum center includes at least 50% by weight water-insoluble gum base.

8. The chewing gum of claim 1 wherein the coating does not have a shellac layer.

9. The chewing gum of claim 1 wherein the gum center and coating are sugar-free.

10. A product including a medicament comprising:

a gum center comprising a water soluble portion and a water insoluble portion, the water insoluble portion comprising at least 30% by weight of the gum center; and

a coating that at least substantially surrounds the gum center and comprises a medicament and a high-intensity sweetener, the coating comprising at least 50% by weight of the product.

11. The product of claim 10 wherein the medicament is selected from the group consisting of analgesics, muscle relaxants, antibiotics, antivirals, stimulants, antihistamines, decongestants, anti-inflammatories, antacids, psychotherapeutic agents, insulin, vitamins, minerals, and cardiovascular agents.

12. The product of claim 10 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

13. The product of claim 10 wherein the taste masking agent is selected from the group consisting of zinc gluconate, ethyl maltol, glycine, acesulfame-k, aspartame, saccharin, fructose, xylitol, isomalt, maltitol, spray dried licorice root, glycrrhizine, sodium gluconate, glucono delta-lactone, ethyl vanillin, dextrose, sucralose, vanillin, and ethyl maltol.

14. The product of claim 10 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

15. The product of claim 10 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener chosen from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

16. The product of claim 10 wherein the coating comprises at least 70% by weight powder when it is applied to the gum center.

17. The product of claim 10 wherein the product is sugar-free.

18. The chewing gum of claim 10 wherein the coating does not have a shellac layer.

**WEST**
  

L17: Entry 1 of 7

File: USPT

Mar 12, 2002

US-PAT-NO: 6355265

DOCUMENT-IDENTIFIER: US 6355265 B1

TITLE: Over-coated chewing gum formulations

DATE-ISSUED: March 12, 2002

**INVENTOR-INFORMATION:**

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**ASSIGNEE-INFORMATION:**

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APPL-NO: 09/ 510878 [PALM]

DATE FILED: February 23, 2000

**PARENT-CASE:**

This is a continuation-in-part of U.S. patent application Ser. Nos. 09/286,818, filed on Apr. 6, 1999 and PCT Patent Application No. PCT/US99/29742 filed on Dec. 14, 1999.

INT-CL: [07] A61 K 9/68

US-CL-ISSUED: 424/440; 424/48, 424/464

US-CL-CURRENT: 424/440; 424/464, 424/48

FIELD-OF-SEARCH: 424/400, 424/48, 424/439, 424/440

**PRIOR-ART-DISCLOSED:****U.S. PATENT DOCUMENTS**
 

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| <input type="checkbox"/> | <a href="#"><u>5912030</u></a> | June 1999      | Huziinec et al.    |
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| FOREIGN-PAT-NO | PUBN-DATE      | COUNTRY | US-CL |
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ART-UNIT: 2615

PRIMARY-EXAMINER: Page; Thurman K.

ASSISTANT-EXAMINER: Howard; S.

ABSTRACT:

Methods and products for delivering a medicament or agent to an individual are provided. The product includes a coating having a medicament or agent. The medicament or agent is present within the coating that surrounds a gum center (the water soluble portion and a water insoluble base portion). By chewing the gum, the medicament or agent is released from the product. Continuing to chew the chewing gum creates a pressure within the buccal cavity forcing the agent or medicament directly into the systemic system of the individual through the oral mucosa contained in the buccal cavity. This greatly enhances the absorption of the drug into the systemic system as well as the bioavailability of the drug within the system.

18 Claims, 4 Drawing figures

WEST

 Generate Collection 

L17: Entry 2 of 7

File: USPT

US-PAT-NO: 6350480

DOCUMENT-IDENTIFIER: US 6350480 B1

TITLE: Chewing gum product including a hydrophilic gum base and method of producing

DATE-ISSUED: February 26, 2002

## INVENTOR-INFORMATION:

| NAME                  | CITY       | STATE | ZIP CODE | COUNTRY |
|-----------------------|------------|-------|----------|---------|
| Urnezis; Philip W.    | Lombard    | IL    |          |         |
| Mazzone; Philip       | Griffith   | IN    |          |         |
| Greenberg; Michael J. | Northbrook | IL    |          |         |
| Bunczek; Michael T.   | Lisle      | IL    |          |         |
| Barkalow; David G.    | Deerfield  | IL    |          |         |
| Monen; George W.      | Woodridge  | IL    |          |         |

US-CL-CURRENT: 426/5; 424/440, 424/48, 426/3, 426/6

## CLAIMS:

What is claimed is:

1. A hydrophilic chewing gum base comprising:
  - a) about 20% to about 90% hydrophilic polymers;
  - b) about 5% to about 35% hydrophilic softeners/emulsifiers; and
  - c) about 4% to about 50% filler;
  - d) the chewing gum base being essentially free of hydrophobic polymers, elastomer solvents, waxes and hydrophobic softeners.
2. The hydrophilic gum base of claim 1 wherein the hydrophilic polymers are selected from the group consisting of polyvinyl acetate, short and medium chain polyesters, short and medium chain polyamides, and short and medium side chain polyvinyl esters and combinations thereof.
3. The hydrophilic gum base of claim 1 wherein the

hydrophilic polymers are selected from the group consisting of high molecular weight is polyvinyl acetate, low molecular weight polyvinyl acetate, polyvinyl butyrates, polyvinyl propionates and combinations thereof.

4. The hydrophilic gum base of claim 1 wherein the hydrophilic softeners/emulsifiers are selected from the group consisting of glycerol monostearate, glycerol triacetate, lecithin, mono-, and diglycerides, short and medium chain triglycerides, acetylated monoglycerides, and combinations thereof.

5. The hydrophilic gum base of claim 1 wherein the filler is selected from the group consisting of magnesium carbonate, calcium carbonate, ground limestone, magnesium silicate, aluminum silicate, clay, alumina, talc, titanium oxide, mono-, di- and tri-calcium phosphate, cellulose polymers and combinations thereof.

6. The hydrophilic gum base of claim 1 wherein the base is free of butyl elastomers, polyisobutylene and styrene butadiene rubber.

7. The hydrophilic gum base of claim 1 wherein the base is free of terpene resins, rosin esters and ester gums.

8. The hydrophilic gum base of claim 1 wherein the gum base, when admixed into a non-coated chewing gum product, the gum product including lipophilic active agents, releases at least 10% of the lipophilic active agent from the chewing gum product within 30 minutes of chewing.

9. A chewing gum product made using the gum base of any one of claims 1-8.

10. A coated chewing gum product comprising:

a) a chewing gum core made from a hydrophilic gum base, the gum base being essentially free of hydrophobic polymers, elastomer solvents, waxes and hydrophobic softeners; and

b) a coating on the core, the coating including a lipophilic active agent.

11. The coated chewing gum product of claim 10 wherein the lipophilic active agent is selected from the group consisting of vitamins, cancer chemotherapeutics, antimycotics, oral contraceptives, analgesics, antacids, muscle relaxants, antihistamines, decongestants, anesthetics, antitussives, diuretics, anti-inflammatories, antibiotics, antivirals, psychotherapeutic agents, anti-diabetic agents, cardiovascular agents, bioengineered pharmaceuticals, nutraceuticals and nutritional supplements.

12. A method of producing coated chewing gum products containing at least one lipophilic active agent in the coating comprising the steps of:

a) providing chewing gum product cores wherein the chewing gum is made from a hydrophilic gum base, the gum base being essentially free of hydrophobic polymers, elastomer solvents, waxes and hydrophobic softeners;

b) providing a coating solution;

c) coating the chewing gum product cores with the coating solution to provide coated chewing gum products, the coating including a lipophilic active agent at a level of from about 12 micrograms to about 250 milligrams per gram of coated chewing gum product.

13. The method of claim 12 wherein the active agent is mixed in the coating solution prior to coating the cores.

14. The method of claim 13 wherein the active agent is also mixed with a solvent before adding to the coating solution and the resulting mixture is added to the chewing gum coating.

15. The method of claim 14 wherein the solvent is water, alcohol or flavor.

16. The method in claim 12 wherein a high-potency sweetener selected from the group consisting of aspartame, alitame, salts of acesulfame, cyclamate and its salts, saccharine and its salts, neotame, thaumatin, monellin, dihydrochalcones, sucralose and combinations thereof is mixed in the coating solution.

17. The method of claim 12 wherein said lipophilic active agent is selected from the group consisting of vitamins, analgesics, antacids, antihistamines, antitussives, antibacterial agents, decongestants and anesthetics.

18. The method of claim 12 wherein the active agent is a nutraceutical.

19. The method of claim 12 wherein said active agent is vitamin E.

20. The method of claim 12 wherein the coating operation includes the application of multiple coats of coating solution and application of powder material between coats of coating solution.

21. The method of claim 20 wherein the active agent is included in the powder material.

22. The method of claim 20 wherein active agent is included in both the coating solution and the powder material.

23. The method of claim 12 wherein a lipophilic active agent is also included in the chewing gum cores.

24. The method of claim 23 wherein the active agents in the gum cores and coating are the same.

25. The method of claim 23 wherein the active agent in the cores is different than the active agent in the coating.

26. The method of claim 12 wherein at least two different coating solutions are used to make the coating.

27. The method of claim 26 wherein the active agent is mixed with the first of the at least two different coating solutions and applied to form a film, and a second coating solution without an active agent is applied over the film coated cores.

28. The method of claim 12 wherein the active agent is present in the coating at a level of from about 10 ppm to about 30% of the coating.

29. A method of delivering a lipophilic active agent comprising the steps of:

- a) providing a chewing gum product having i) a chewing gum core made using a hydrophilic gum base, the gum base being essentially free of hydrophobic polymers, elastomer solvents, waxes and hydrophobic softeners, and ii) a coating including a lipophilic active agent in the coating; and
- b) chewing the chewing gum product for at least 10 minutes in an oral cavity of an individual chewing the chewing gum product.

30. The method of claim 29 wherein the active agent is chosen from the group consisting of: vitamins; analgesics; muscle relaxants; antibiotics; antivirals; antihistamines; decongestants; anti-inflammatories; antacids; psychotherapeutic agents; and cardiovascular agents.

**WEST**  

L17: Entry 2 of 7

File: USPT

Feb 26, 2002

US-PAT-NO: 6350480

DOCUMENT-IDENTIFIER: US 6350480 B1

TITLE: Chewing gum product including a hydrophilic gum base and method of producing

DATE-ISSUED: February 26, 2002

## INVENTOR-INFORMATION:

| NAME                  | CITY       | STATE | ZIP CODE | COUNTRY |
|-----------------------|------------|-------|----------|---------|
| Urnezis; Philip W.    | Lombard    | IL    |          |         |
| Mazzone; Philip       | Griffith   | IN    |          |         |
| Greenberg; Michael J. | Northbrook | IL    |          |         |
| Bunczek; Michael T.   | Lisle      | IL    |          |         |
| Barkalow; David G.    | Deerfield  | IL    |          |         |
| Monen; George W.      | Woodridge  | IL    |          |         |

## ASSIGNEE-INFORMATION:

| NAME                    | CITY    | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|-------------------------|---------|-------|----------|---------|-----------|
| Wm. Wrigley Jr. Company | Chicago | IL    |          |         | 02        |

APPL-NO: 09/ 749983 [PALM]

DATE FILED: December 27, 2000

## PARENT-CASE:

REFERENCE TO EARLIER FILED APPLICATION The present application claims the benefit of the filing date under 35 U.S.C. sctn.119(e) of provisional U.S. Patent Application, Ser. No. 60/173,736, filed Dec. 30, 1999, which is hereby incorporated by reference.

INT-CL: [07] A23 G 3/30, A61 K 9/68

US-CL-ISSUED: 426/5; 424/48, 424/440, 426/3, 426/6

US-CL-CURRENT: 426/5, 424/440, 424/48, 426/3, 426/6

FIELD-OF-SEARCH: 426/3, 426/5, 426/6, 424/48, 424/440

## PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

| PAT-NO                                                  | ISSUE-DATE    | PATENTEE-NAME     | US-CL   |
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| <input type="checkbox"/> <a href="#"><u>4238510</u></a> | December 1980 | Cherukuri et al.  | 426/5   |
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| FOREIGN-PAT-NO<br>98/23165 | PUBN-DATE<br>June 1998 | COUNTRY<br>WO | US-CL<br>426/5 |
|----------------------------|------------------------|---------------|----------------|

ART-UNIT: 1761

PRIMARY-EXAMINER: Corbin; Arthur L.

## ABSTRACT:

A method for producing a chewing gum with an improved release of a lipophilic active agent, as well as the chewing gum so produced, is obtained by using a hydrophilic gum base. The preferred and novel gum base includes hydrophilic polymers, hydrophilic softeners/emulsifiers and fillers, but is essentially free of hydrophobic elastomers and hydrophobic softeners, as well as waxes and elastomer solvents. The lipophilic active agent is preferably added to a coating on a chewing gum pellet made using a hydrophilic gum base, such as by being mixed into a coating solution. The coating solution may contain a high-intensity sweetener. An active agent may also be used in the gum core.

30 Claims, 0 Drawing figures

**WEST**  

L17: Entry 3 of 7

File: USPT

US-PAT-NO: 6322806

DOCUMENT-IDENTIFIER: US 6322806 B1

TITLE: Over-coated chewing gum formulations including tableted center

DATE-ISSUED: November 27, 2001

## INVENTOR-INFORMATION:

| NAME                    | CITY        | STATE | ZIP CODE | COUNTRY |
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| Ream; Ronald L.         | Plano       | IL    |          |         |
| Corriveau; Christine L. | Orland Park | IL    |          |         |
| Graff; Gwendolyn        | DeKalb      | IL    |          |         |
| Matulewicz; Leonard     | Oswego      | IL    |          |         |

US-CL-CURRENT: 424/440; 424/464, 424/48

## CLAIMS:

We claim:

1. A chewing gum comprising:

a tableted gum center comprising a water soluble portion and a water insoluble portion; and

a coating comprising a medicament that surrounds the tableted gum center, the coating comprising at least 50% by weight of the chewing gum product.

2. The chewing gum of 1 wherein the medicament is selected from the group consisting of analgesics, muscle relaxants, antibiotics, antivirals, stimulants, antihistamines, decongestants, anti-inflammatories, antacids, psychotherapeutic agents, insulin, vitamins, minerals, and cardiovascular agents.

3. The chewing gum of claim 1 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

4. The chewing gum of claim 3 wherein the taste masking agent is selected from the group consisting of zinc

gluconate, ethyl maltol, glycine, acesulfame-k, aspartame, saccharin, fructose, xylitol, isomalt, maltitol, spray dried licorice root, glycrrhizine, sodium gluconate, glucono delta-lactone, ethyl vanillin, dextrose, sucralose, vanillin, and ethyl maltol.

5. The chewing gum of claim 3 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

6. The chewing gum of claim 1 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener selected from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

7. The chewing gum of claim 1 wherein the tableted gum center includes at least 50% by weight water-insoluble gum base.

8. The chewing gum of claim 1 wherein the coating does not have a shellac layer.

9. The chewing gum of claim 1 wherein the tableted gum center and coating are sugar-free.

10. A product including a medicament comprising:

a tableted gum center comprising a water soluble portion and a water insoluble portion, the water insoluble portion comprising at least 30% by weight of the tableted gum center; and

a coating that at least substantially surrounds the tableted gum center and comprises a medicament and a high-intensity sweetener, the coating comprising at least 50% by weight of the product.

11. The product of claim 10 wherein the medicament is selected from the group consisting of analgesics, muscle relaxants, antibiotics, antivirals, stimulants, antihistamines, decongestants, anti-inflammatories, antacids, psychotherapeutic agents, insulin, vitamins, minerals, and cardiovascular agents.

12. The product of claim 10 wherein the coating includes

a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

13. The product of claim 10 wherein the taste masking agent is selected from the group consisting of zinc gluconate, ethyl maltol, glycine, acesulfame-k, aspartame, saccharin, fructose, xylitol, isomalt, maltitol, spray dried licorice root, glycrrhizine, sodium gluconate, glucono delta-lactone, ethyl vanillin, dextrose, sucralose, vanillin, and ethyl maltol.

14. The product of claim 10 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

15. The product of claim 10 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener chosen from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

16. The product of claim 10 wherein the coating comprises at least 70% by weight powder when it is applied to the tableted gum center.

17. The product of claim 10 wherein the product is sugar-free.

18. The chewing gum of claim 10 wherein the coating does not have a shellac layer.

19. A chewing gum product including a medicament comprising:

a uniform gum center comprising a water-soluble and a water-insoluble portion; and

a coating that substantially surrounds the uniform gum center and comprises a medicament, the coating comprising at least 50% by weight of the chewing gum product.

20. The chewing gum product of claim 19 wherein the medicament is selected from the group consisting of analgesics, muscle relaxants, antibiotics, antivirals, stimulants, antihistamines, decongestants, anti-inflammatories, antacids, psychotherapeutic agents, insulin, vitamins, minerals, and cardiovascular agents.

21. The chewing gum product of claim 19 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

22. The chewing gum product of claim 19 wherein the taste masking agent is selected from the group consisting of zinc gluconate, ethyl maltol, glycine, acesulfame-k, aspartame, saccharin, fructose, xylitol, isomalt, maltitol, spray dried licorice root, glycrrhizine, sodium gluconate, glucono delta-lactone, ethyl vanillin, dextrose, sucralose, vanillin, and ethyl maltol.

23. The chewing gum product of claim 19 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

24. The chewing gum product of claim 19 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener selected from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

25. The chewing gum product of claim 19 wherein the tableted gum center includes at least 50% by weight water-insoluble gum base.

26. The chewing gum product of claim 19 wherein the coating does not have a shellac layer.

27. The chewing gum product of claim 19 wherein the tableted gum center and coating are sugar-free.

28. A product including a medicament comprising:

a gum center having a controlled size and shape and comprising a water-soluble and a water-insoluble portion; and

a coating that substantially surrounds the gum center and comprises a medicament, the coating comprising at least 50% by weight of the product.

29. The product of claim 28 wherein the medicament is selected from the group consisting of analgesics, muscle relaxants, antibiotics, antivirals, stimulants,

antihistamines, decongestants, anti-inflammatories, antacids, psychotherapeutic agents, insulin, vitamins, minerals, and cardiovascular agents.

30. The product of claim 28 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

31. The product of claim 28 wherein the taste masking agent is selected from the group consisting of zinc gluconate, ethyl maltol, glycine, acesulfame-k, aspartame, saccharin, fructose, xylitol, isomalt, maltitol, spray dried licorice root, glycrrhizine, sodium gluconate, glucono delta-lactone, ethyl vanillin, dextrose, sucralose, vanillin, and ethyl maltol.

32. The product of claim 28 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

33. The product of claim 28 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener selected from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

34. The product of claim 28 wherein the tableted gum center includes at least 50% by weight water-insoluble gum base.

35. The product of claim 28 wherein the coating does not have a shellac layer.

36. The product of claim 28 wherein the tableted gum center and coating are sugar-free.

**WEST**
  

L17: Entry 3 of 7

File: USPT

Nov 27, 2001

US-PAT-NO: 6322806

DOCUMENT-IDENTIFIER: US 6322806 B1

TITLE: Over-coated chewing gum formulations including tableted center

DATE-ISSUED: November 27, 2001

## INVENTOR-INFORMATION:

| NAME                    | CITY        | STATE | ZIP CODE | COUNTRY |
|-------------------------|-------------|-------|----------|---------|
| Ream; Ronald L.         | Plano       | IL    |          |         |
| Corriveau; Christine L. | Orland Park | IL    |          |         |
| Graff; Gwendolyn        | DeKalb      | IL    |          |         |
| Matulewicz; Leonard     | Oswego      | IL    |          |         |

## ASSIGNEE-INFORMATION:

| NAME                    | CITY    | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|-------------------------|---------|-------|----------|---------|-----------|
| Wm. Wrigley Jr. Company | Chicago | IL    |          |         | 02        |

APPL-NO: 09/ 618808 [PALM]

DATE FILED: July 18, 2000

## PARENT-CASE:

This is a continuation-in-part of U.S. patent application Ser. No. 09/510,878, filed on Feb. 23, 2000, which is a continuation-in-part of U.S. patent application Ser. Nos. 09/286,818, filed on Apr. 6, 1999 and PCT Patent Application No. PCT/US99/29742 filed on Dec. 14, 1999.

INT-CL: [07] A61 K 9/68, A61 K 9/20

US-CL-ISSUED: 424/440; 424/48, 424/464

US-CL-CURRENT: 424/440; 424/464, 424/48

FIELD-OF-SEARCH: 424/400, 424/48, 424/439, 424/440, 424/464, 426/5

## PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

| PAT-NO                                  | ISSUE-DATE    | PATENTEE-NAME  | US-CL  |
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| <input type="checkbox"/> <u>1298670</u> | April 1919    | Cramer         |        |
| <input type="checkbox"/> <u>1629461</u> | May 1927      | Berg et al.    |        |
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| <input type="checkbox"/> | <a href="#"><u>3554767</u></a> | January 1971   | Daum                |         |
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| <input type="checkbox"/> | <a href="#"><u>3877468</u></a> | April 1975     | Lichtneckert et al. | 131/2   |
| <input type="checkbox"/> | <a href="#"><u>3901248</u></a> | August 1975    | Lichtneckert et al. | 131/2   |
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| <input type="checkbox"/> | <a href="#"><u>5900230</u></a> | May 1999       | Cutler             | 424/49  |
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| <input type="checkbox"/> | <a href="#"><u>6090412</u></a> | July 2000      | Hashimoto et al.   |         |

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| FOREIGN-PAT-NO | PUBN-DATE      | COUNTRY | US-CL |
|----------------|----------------|---------|-------|
| 43 42 568      | June 1984      | DE      |       |
| 0202819 A2     | November 1986  | EP      |       |
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| 2345938        | March 1976     | FR      |       |
| 2 635 441      | February 1990  | FR      |       |
| 2706771        | June 1993      | FR      |       |
| 0 934 596      | August 1963    | GB      |       |
| 0 963 518      | July 1964      | GB      |       |
| 1 489 832      | October 1977   | GB      |       |
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| 94-303911      | November 1994  | JP      |       |
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| 94-2868        | April 1994     | KR      |       |
| 84/02271       | June 1984      | WO      |       |
| 90/12583       | November 1990  | WO      |       |
| 90/12511       | November 1990  | WO      |       |
| 92/06680       | April 1992     | WO      |       |
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| 95/00038       | January 1995   | WO      |       |
| 95/10290       | April 1995     | WO      |       |
| 96/00070       | January 1996   | WO      |       |
| 96/03975       | February 1996  | WO      |       |
| 97/21424       | June 1997      | WO      |       |
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ART-UNIT: 165

PRIMARY-EXAMINER: Page; Thurman K.

ASSISTANT-EXAMINER: Howard; S.

**ABSTRACT:**

Methods and products for delivering a medicament or agent to an individual are provided as well as methods for producing the product. The product includes a coating having a medicament or agent. The medicament or agent is present within the coating that surrounds a tableted gum center (the water soluble portion and a water insoluble base portion). By chewing the gum, the medicament or agent is released from the product. Continuing to chew the chewing gum creates a pressure within the buccal cavity forcing the agent or medicament directly into the systemic system of the individual through the oral mucosa contained in the buccal cavity. This greatly enhances the absorption of the drug into the systemic system as well as the bioavailability of the drug within the system.

36 Claims, 4 Drawing figures

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L17: Entry 4 of 7

File: USPT

US-PAT-NO: 6290985

DOCUMENT-IDENTIFIER: US 6290985 B1

TITLE: Over-coated chewing gum formulations including tableted center

DATE-ISSUED: September 18, 2001

## INVENTOR-INFORMATION:

| NAME                    | CITY        | STATE | ZIP CODE | COUNTRY |
|-------------------------|-------------|-------|----------|---------|
| Ream; Ronald L.         | Plano       | IL    |          |         |
| Corriveau; Christine L. | Orland Park | IL    |          |         |
| Graff; Gwendolyn        | DeKalb      | IL    |          |         |
| Matulewicz; Leonard     | Oswego      | IL    |          |         |

US-CL-CURRENT: 424/440; 424/439, 424/441, 424/464, 424/474

## CLAIMS:

We claim:

1. A method for delivering a medicament to an individual comprising the steps of:

providing a chewing gum that includes a tableted gum center and a coating that substantially surrounds the tableted gum center, the coating comprising at least 50% by weight of the chewing gum, the coating comprises a medicament;

chewing the chewing gum to cause the medicament to be released from the chewing gum composition into the buccal cavity of the individual; and

continuing to chew the chewing gum thereby creating a fluid pressure causing the medicament to enter the systemic system of the individual through an oral mucosa of the individual.

2. The method of claim 1 wherein the coating includes a high-intensity sweetener.

3. The method of claim 1 wherein the high-intensity

sweetener is chosen from the group consisting of aspartame, sucralose, saccharin, and acesulfame-k.

4. The method of claim 1 wherein the coating is produced by alternating layers of a powder and a syrup onto the tableted gum center.

5. The method of claim 1 wherein the tableted gum center includes at least 50% by weight water-insoluble gum base.

6. The method of claim 1 wherein the medicament is chosen from the group consisting of: analgesics; muscle relaxants; antibiotics; antivirals; antihistamines; decongestants; anti-inflammatories; antacids; psychotherapeutic agents; insulin; vitamins; minerals; and cardiovascular agents.

7. The method of claim 1 wherein the coating has a matte finish.

8. The method of claim 1 wherein the coating does not include a shellac layer.

9. A method of delivering a medicament comprising the steps of:

providing a chewing gum having a tableted gum center and a coating that substantially surrounds the center, the coating comprising at least 50% by weight of the chewing gum, the coating comprises a medicament and not a shellac layer; and

chewing the chewing gum for at least 2 minutes in a buccal cavity of an individual chewing the chewing gum.

10. The method of claim 9 wherein the medicament is chosen from the group consisting of: analgesics; muscle relaxants; antibiotics; antivirals; antihistamines; decongestants; anti-inflammatories; antacids; psychotherapeutic agents; and cardiovascular agents.

11. The method of claim 9 wherein the tableted gum center comprises approximately 30% to about 90% by weight insoluble gum base.

12. A method for delivering a medicament to an individual

comprising the steps of:

providing a chewing gum product that includes a tableted gum center that is substantially coated by a formulation that includes a medicament and a sufficient amount of a masking agent to provide acceptable organoleptic properties, the formulation comprising at least 50% by weight of the chewing gum product; and

chewing the chewing gum product to cause the medicament to be released from the formulation into a buccal cavity of the individual.

13. The method of claim 12 wherein the formulation includes a high-intensity sweetener.

14. The method of claim 12 wherein the medicament is chosen from the group consisting of: analgesics; muscle relaxants; antibiotics; antivirals; stimulants; antihistamines; decongestants; anti-inflammatories; antacids; psychotherapeutic agents; insulin; vitamins; minerals; and cardiovascular agents.

15. The method of claim 12 wherein the taste masking agent is chosen from the group consisting of: zinc gluconate, ethyl maltol, glycine, acesulfame-k, aspartame; saccharin; fructose; xylitol; isomalt; maltitol; spray dried licorice root; glycrrhizine; sodium gluconate; glucono delta-lactone; vanillin; dextrose; sucralose; and ethyl maltol.

16. The method of claim 12 wherein the masking agent comprises approximately 30% to about 99% by weight of the coating.

17. A method of manufacturing a product containing an agent comprising the steps of:

preparing a gum center having a water soluble portion and a water insoluble portion by tableting the water-soluble portion and water-insoluble portion to produce a tableted gum center; and

coating the center by placing alternating layers of a powder and a syrup on the center to create a coated product, at least one of the powder or syrup layers

comprising at least one agent.

18. The method of claim 17 wherein the coated product comprises at least 50% by weight syrup and powder coating.

19. The method of claim 17 wherein the tableted gum center includes at least 50% by weight water-insoluble gum base.

20. The method of claim 17 wherein the coating includes a high-intensity sweetener.

21. The method of claim 17 wherein the agent is a medicament.

22. The method of claim 20 wherein the medicament is chosen from the group consisting of: analgesics; muscle relaxants; antibiotics; antivirals; antihistamines; decongestants; anti-inflammatories; antacids; psychotherapeutic agents; insulin; vitamins; minerals; and cardiovascular agents.

23. The method of claim 17 wherein at least two alternating layers are coated on to the center.

24. The method of claim 17 wherein the powder comprises at least 70% by weight of the coating.

25. The method of claim 17 wherein the coating does not include a shellac layer.

26. A method of providing chewing gum that includes a medicament comprising the steps of:

preparing a gum center having a water-soluble portion and a water-insoluble portion by tabletting the water-soluble and water-insoluble portions into a predefined shape; and

coating the predefined shape with at least one layer comprising a medicament.

27. The method of claim 26 wherein the coated product comprises at least 50% by weight syrup and powder coating.

28. The method of claim 26 wherein the medicament is chosen from the group consisting of: analgesics; muscle relaxants; antibiotics; antivirals; antihistamines; decongestants; anti-inflammatories; antacids; psychotherapeutic agents; insulin; vitamins; minerals; and cardiovascular agents.

29. The method of claim 26 wherein the coating includes a high-intensity sweetener.

**WEST**
  

L17: Entry 4 of 7

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| Corriveau; Christine L. | Orland Park | IL    |          |         |
| Graff; Gwendolyn        | DeKalb      | IL    |          |         |
| Matulewicz; Leonard     | Oswego      | IL    |          |         |

**ASSIGNEE-INFORMATION:**

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APPL-NO: 09/ 759838 [PALM]

DATE FILED: January 11, 2001

**PARENT-CASE:**

This is a divisional of U.S. patent application Ser. No. 09/618,808, filed on Jul. 18, 2000, which is a continuation-in-part of U.S. patent application Ser. No. 09/510,878, filed on Feb. 23, 2000, which is a continuation-in-part of U.S. patent application Ser. No. 09/286,818, filed on Apr. 6, 1999 and PCT Patent Application No. PCT/US99/29742 filed on Dec. 14, 1999.

INT-CL: [07] A61 K 9/28, A61 K 9/68, A61 K 47/00

US-CL-ISSUED: 424/440; 424/439, 424/441, 424/464, 424/474

US-CL-CURRENT: 424/440; 424/439, 424/441, 424/464, 424/474

FIELD-OF-SEARCH: 424/439, 424/440, 424/441, 424/464, 424/474

**PRIOR-ART-DISCLOSED:****U.S. PATENT DOCUMENTS**
 

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ART-UNIT: 165

PRIMARY-EXAMINER: Page; Thurman K.

ASSISTANT-EXAMINER: Howard; S.

**ABSTRACT:**

Methods and products for delivering a medicament or agent to an individual are provided as well as methods for producing the product. The product includes a coating having a medicament or agent. The medicament or agent is present within the coating that surrounds a tableted gum center (the water soluble portion and a water insoluble base portion). By chewing the gum, the medicament or agent is released from the product. Continuing to chew the chewing gum creates a pressure within the buccal cavity forcing the agent or medicament directly into the systemic system of the individual through the oral mucosa contained in the buccal cavity. This greatly enhances the absorption of the drug into the systemic system as well as the bioavailability of the drug within the system.

29 Claims, 4 Drawing figures

**WEST** [Generate Collection](#) 

L17: Entry 6 of 7

File: USPT

US-PAT-NO: 5433960

DOCUMENT-IDENTIFIER: US 5433960 A

TITLE: Chewing gum including agent containing edible film

DATE-ISSUED: July 18, 1995

## INVENTOR-INFORMATION:

| NAME         | CITY       | STATE | ZIP CODE | COUNTRY |
|--------------|------------|-------|----------|---------|
| Meyers, Marc | Naperville | IL    |          |         |

US-CL-CURRENT: 426/5; 426/302, 426/306, 426/307, 426/310

## CLAIMS:

I claim:

1. A stick of chewing gum comprising:

a gum body in the shape of a stick

a coating of an edible film that coats the stick of chewing gum, the edible film includes at least one material chosen from the group consisting of: cellulose derivatives; modified starch; maltodextrin; polyols; low calorie bulking agents; dextrin; gelatin; zein; soy proteins; gluten; whey proteins; vegetable gums; edible polymers; edible plastics; shellac; carbohydrates; modified carbohydrates; carbohydrate derivatives; proteins; lipids; pseudolatexes; colloidal dispersion; ethylcellulose emulsion; wax emulsions; and combinations thereof, the coating of edible film having sufficient barrier properties to provide the chewing gum with increased moisture stability at ambient conditions than a chewing gum without the coating of edible film, the edible film including at least one active chewing gum agent.

2. The stick of chewing gum of claim 1 wherein the active chewing gum agent is a sweetener.3. The stick of chewing gum of claim 1 wherein the active

chewing gum agent is a flavor.

4. The stick of chewing gum of claim 1 wherein the active chewing gum agent is a dental agent.

5. The stick of chewing gum of claim 1 wherein the active chewing gum agent is a softener.

6. The stick of chewing gum of claim 1 wherein the active chewing gum agent is a flavor enhancer.

7. The stick of chewing gum of claim 1 wherein the active chewing gum agent is water.

8. The stick of chewing gum of claim 1 wherein the active chewing gum agent is a slip agent.

9. The stick of chewing gum of claim 1 wherein the active agent is an antioxidant.

10. The stick of chewing gum of claim 1 wherein the active chewing gum agent is a color.

11. The stick of chewing gum of claim 1 wherein the chewing gum is a stick gum including a first side and a second side and the edible film is applied to both sides.

12. The stick of chewing gum of claim 1 wherein the coating of edible material includes an edible film forming agent chosen from the group consisting of: cellulose derivatives; modified starch; maltodextrin; polyols; low calorie bulking agents; dextrin; gelatin; zein; soy proteins; gluten; whey proteins; vegetable gums; edible polymers; edible plastics; shellac; and combinations thereof.

13. The stick of chewing gum of claim 1 wherein the coating of edible material comprises:

a first layer of an edible film; and

a second layer of at least one material chosen from the group consisting of: wax, hydrocarbon polymer type waxes, fatty acids, fats, oils, and lipid derivatives.

14. The stick of chewing gum of claim 1 wherein the

coating of edible material is an emulsion including at least two materials chosen from the group consisting of: carbohydrates; modified carbohydrates; carbohydrate derivatives; proteins; and lipids.

15. The stick of chewing gum of claim 1 wherein the coating of edible material includes an emulsion chosen from the group consisting of: pseudolatexes; colloidal dispersions; ethylcellulose emulsion; and wax emulsions.

16. A stick chewing gum comprising:

a gum body in the shape of a stick that includes an insoluble gum base and a water soluble portion;

a coating of an edible film that coats the surface of the gum body, the edible film includes at least one material chosen from the group consisting of: cellulose derivatives; modified starch; maltodextrin; polyols; low calorie bulking agents; dextrin; gelatin; zein; soy proteins; gluten; whey proteins; vegetable gums; edible polymers; edible plastics; shellac; carbohydrates; modified carbohydrates; carbohydrate derivatives; proteins; lipids; pseudolatexes; colloidal dispersion; ethylcellulose emulsion; wax emulsions; and combinations thereof, the coating of edible film coats at least a substantial portion of the gum body and provides sufficient barrier properties to the gum body to provide the stick chewing gum with increased moisture stability at ambient conditions than a chewing gum without the edible film; and

at least one active agent chosen from the group consisting of: sweeteners; flavor; dental agents; softeners; antioxidants; flavor enhancers; water; colors; and slip agents, that is located within the coating of edible film.

17. The stick chewing gum of claim 16 wherein the sweetener is chosen from the group consisting of: Aspartame; alitame; sucralose; salts of acesulfame; saccharine and its salts; cyclamic acid and its salts; glycyrrhizin; dihydrochalcones; thaumatin; and combinations thereof.

18. The stick chewing gum of claim 16 wherein the flavor

is chosen from the group consisting of: citrus oils, light fruit esters, mint oils, clove oil, oil of wintergreen, anise, and artificial flavors.

19. The stick chewing gum of claim 16 wherein the dental agent is chosen from the group consisting of: plaque pH buffers, phosphates, minerals, urea, sodium bicarbonate, calcium glycerophosphate, and remineralizing agents.

20. The stick chewing gum of claim 16 wherein the softener is chosen from the group consisting of: lecithin, glycerol monostearate, triacetin, acetylated monoglycerides, polyol esters, polyglycol esters, fats, oils, and other lipids.

21. The stick chewing gum of claim 16 wherein the slip agent is chosen from the group consisting of: silicones, stearates, high melting point waxes, silicon dioxide, talc, and polymer slip agents.

22. The stick chewing gum of claim 16 wherein the color is chosen from the group consisting of: dyes, lakes, pigments, whitenets, and natural food colorants.

23. A method for manufacturing chewing gum comprising the steps of:

creating a unit of chewing gum in the form of a stick;

coating a surface of the unit of chewing gum with an edible film that includes at least one material chosen from the group consisting of: cellulose derivatives; modified starch; maltodextrin; polyols; low calorie bulking agents; dextrin; gelatin; zein; soy proteins; gluten; whey proteins; vegetable gums; edible polymers; edible plastics; shellac; carbohydrates; modified carbohydrates; carbohydrate derivatives; proteins; lipids; pseudolatexes; colloidal dispersion; ethylcellulose emulsion; wax emulsions; and combinations thereof, the coating of edible film providing barrier properties; and

locating in the coating of edible film at least one active chewing gum agent chosen from the group consisting of: sweeteners; flavor; antioxidants; dental agents; softeners; flavor enhancers; water; colors; and slip

agents.

24. The method of claim 23 wherein the unit is a stick of gum.

25. The method of claim 23 wherein the stick of chewing gum includes a first and second side and the first and second sides are both coated with the edible film.

26. The method of claim 23 wherein the active agent is present in the film on only a first or a second side of the chewing gum stick.

27. A method for segregating in a chewing gum ingredients comprising the steps of:

creating a chewing gum structure that has a stick shape; and

coating a surface of the chewing gum structure with a coating of an edible film that includes one or more ingredients that interact with one or more ingredients located in the chewing gum structure, the edible film also including at least one material chosen from the group consisting of: cellulose derivatives; modified starch; maltodextrin; polyols; low calorie bulking agents; dextrin; gelatin; zein; soy proteins; gluten; whey proteins; vegetable gums; edible polymers; edible plastics; shellac; carbohydrates; modified carbohydrates; carbohydrate derivatives; proteins; lipids; pseudolatexes; colloidal dispersion; ethylcellulose emulsion; wax emulsions; and combinations thereof.

28. A method for providing improved processability to a chewing gum composition comprising the steps of:

creating a unit of chewing gum having a stick shape; and

coating a surface of the stick shape with a coating of edible film that includes a slip agent and least one material chosen from the group consisting of: cellulose derivatives; modified starch; maltodextrin; polyols; low calorie bulking agents; dextrin; gelatin; zein; soy proteins; gluten; whey proteins; vegetable gums; edible polymers; edible plastics; shellac; carbohydrates; modified carbohydrates; carbohydrate derivatives;

proteins; lipids; pseudolatexes; colloidal dispersion; ethylcellulose emulsion; wax emulsions; and combinations thereof.

29. The method for providing of claim 28 wherein the slip agent is chosen from the group consisting of: silicones, stearates, high melting point waxes, silicon dioxide, talc, and polymer slip agents.

**WEST**  

L17: Entry 6 of 7

File: USPT

Jul 18, 1995

US-PAT-NO: 5433960

DOCUMENT-IDENTIFIER: US 5433960 A

TITLE: Chewing gum including agent containing edible film

DATE-ISSUED: July 18, 1995

## INVENTOR-INFORMATION:

| NAME         | CITY       | STATE | ZIP CODE | COUNTRY |
|--------------|------------|-------|----------|---------|
| Meyers; Marc | Naperville | IL    |          |         |

## ASSIGNEE-INFORMATION:

| NAME                    | CITY    | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|-------------------------|---------|-------|----------|---------|-----------|
| Wm. Wrigley Jr. Company | Chicago | IL    |          |         | 02        |

APPL-NO: 08/ 049814 [PALM]

DATE FILED: April 20, 1993

## PARENT-CASE:

This is a continuation-in-part of U.S. patent application Ser. No. 07/871,962, filed on Apr. 21, 1992.

INT-CL: [06] A23 G 3/30

US-CL-ISSUED: 426/5; 426/302, 426/306, 426/307, 426/310

US-CL-CURRENT: 426/5; 426/302, 426/306, 426/307, 426/310

FIELD-OF-SEARCH: 426/3-6, 426/96, 426/99, 426/302, 426/306, 426/310, 426/307

## PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

| PAT-NO                                                  | ISSUE-DATE     | PATENTEE-NAME       | US-CL    |
|---------------------------------------------------------|----------------|---------------------|----------|
| <input type="checkbox"/> <a href="#"><u>4105801</u></a> | August 1978    | Dogliotti           | 426/99   |
| <input type="checkbox"/> <a href="#"><u>4117173</u></a> | September 1978 | Schiweck et al.     | 426/548  |
| <input type="checkbox"/> <a href="#"><u>4127677</u></a> | November 1978  | Fronczkowski et al. | 426/5    |
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| <input type="checkbox"/> <a href="#"><u>4224219</u></a> | September 1980 | Van Blanton et al.  | 260/211G |
| <input type="checkbox"/> <a href="#"><u>4317838</u></a> | March 1982     | Cherukuri et al.    | 426/5    |
| <input type="checkbox"/> <a href="#"><u>4323588</u></a> | April 1982     | Vink et al.         | 426/564  |
| <input type="checkbox"/> <a href="#"><u>4359531</u></a> | November 1982  | Bucke et al.        | 435/97   |
| <input type="checkbox"/> <a href="#"><u>4423086</u></a> | December 1983  | Devos et al.        | 427/3    |
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| <input type="checkbox"/> <a href="#"><u>4567053</u></a> | January 1986   | Lindley             | 426/538  |
| <input type="checkbox"/> <a href="#"><u>4568560</u></a> | February 1986  | Schobel             | 427/3    |
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| <input type="checkbox"/> <a href="#"><u>4661359</u></a> | April 1987     | Seaborne et al.     | 426/89   |
| <input type="checkbox"/> <a href="#"><u>4681766</u></a> | June 1987      | Huzinec et al.      | 426/5    |
| <input type="checkbox"/> <a href="#"><u>4693974</u></a> | September 1987 | Schwengers et al.   | 435/97   |
| <input type="checkbox"/> <a href="#"><u>4777046</u></a> | November 1988  | Iwakura et al.      | 424/435  |
| <input type="checkbox"/> <a href="#"><u>4786511</u></a> | November 1988  | Huzinec et al.      | 426/5    |
| <input type="checkbox"/> <a href="#"><u>4792453</u></a> | December 1988  | Reed et al.         | 426/5    |
| <input type="checkbox"/> <a href="#"><u>4802924</u></a> | February 1989  | Woznicki et al.     | 427/3    |
| <input type="checkbox"/> <a href="#"><u>4810524</u></a> | March 1989     | Seaborne et al.     | 427/384  |
| <input type="checkbox"/> <a href="#"><u>4822622</u></a> | April 1989     | Dokuzovic et al.    | 426/5    |
| <input type="checkbox"/> <a href="#"><u>4824680</u></a> | April 1989     | Bernatz et al.      | 426/3    |
| <input type="checkbox"/> <a href="#"><u>4828845</u></a> | May 1989       | Zamudio-Tena et al. | 426/5    |
| <input type="checkbox"/> <a href="#"><u>4885175</u></a> | December 1989  | Zibell              | 426/5    |
| <input type="checkbox"/> <a href="#"><u>4915971</u></a> | April 1990     | Fennema et al.      | 426/578  |
| <input type="checkbox"/> <a href="#"><u>4931294</u></a> | June 1990      | Yatka et al.        | 426/3    |
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| <input type="checkbox"/> <a href="#"><u>4976972</u></a> | December 1990  | Patel et al.        | 426/3    |
| <input type="checkbox"/> <a href="#"><u>4978537</u></a> | December 1990  | Song                | 426/5    |
| <input type="checkbox"/> <a href="#"><u>5048260</u></a> | September 1991 | Raymond et al.      | 53/370.8 |
| <input type="checkbox"/> <a href="#"><u>5089307</u></a> | February 1992  | Ninomiya et al.     | 428/35.2 |
| <input type="checkbox"/> <a href="#"><u>5108762</u></a> | April 1992     | Broderick et al.    | 426/5    |
| <input type="checkbox"/> <a href="#"><u>5124160</u></a> | April 1992     | Zibell et al.       | 426/3    |
| <input type="checkbox"/> <a href="#"><u>5128155</u></a> | July 1992      | Song et al.         | 426/5    |
| <input type="checkbox"/> <a href="#"><u>5130150</u></a> | July 1992      | Averbach            | 426/99   |
| <input type="checkbox"/> <a href="#"><u>5130151</u></a> | July 1992      | Averbach            | 426/99   |
| <input type="checkbox"/> <a href="#"><u>5139787</u></a> | August 1992    | Broderick et al.    | 424/48   |
| <input type="checkbox"/> <a href="#"><u>5165944</u></a> | November 1992  | Song et al.         | 426/5    |

FOREIGN PATENT DOCUMENTS

| FOREIGN-PAT-NO | PUBN-DATE     | COUNTRY | US-CL |
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| 0273000        | June 1988     | EP      |       |
| 0298768        | January 1989  | EP      |       |
| 0328849        | August 1989   | EP      |       |
| 3043914A1      | June 1981     | DE      |       |
| WO86/00501     | January 1986  | WO      |       |
| WO87/03453     | June 1987     | WO      |       |
| WO87/07902     | December 1987 | WO      |       |
| WO89/03170     | April 1989    | WO      |       |
| WO90/06061     | June 1990     | WO      |       |
| WO90/07864     | July 1990     | WO      |       |
| WO90/13994     | November 1990 | WO      |       |
| WO91/03147     | March 1991    | WO      |       |

#### OTHER PUBLICATIONS

Brochure: "Palatinit Infopac", Sussungsmittel GmbH (1984).

ART-UNIT: 132

PRIMARY-EXAMINER: Hunter; Jeanette

#### ABSTRACT:

Improved chewing gums and methods for manufacturing same. A chewing gum is provided comprising an edible film having sufficient barrier properties to provide the chewing gum with increased moisture stability at ambient conditions than a chewing gum without the edible film, the edible film including at least one active chewing gum agent.

29 Claims, 11 Drawing figures

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L21: Entry 16 of 27

File: USPT

DOCUMENT-IDENTIFIER: US 5651959 A

TITLE: Ultramulsion based oral care compositions

**Brief Summary Text (32):**

Other anti-gingivitis antimicrobials include chlorhexidine, halogenated diphenyl ethers such as triclosan, phenol and its homologs and the essential oils used in Listerine.RTM.. U.S. Pat. Nos. 4,022,880 & 4,894,220 disclose and claim various triclosan based oral care products. U.S. Pat. No. 4,894,220 includes an extensive teaching on phenol and its homologs suitable as antimicrobial agents. Metronidazole is discussed in detail in U.S. Pat. No. 4,568,535. The Listerine.RTM. essential oils are described in detail by Kornman in Journal of Periodontal Research, Supplement 1986: 5-22 (1986).

**Brief Summary Text (34):**

a. Quaternary ammonium compounds including benzethonium chloride, cetylpyridinium chloride as described by Volpe et al., Journal of Dental Research, 48: 832-841 (1969) and Gjermo et al., Journal of Periodontal Research, 5: 102-109 (1970).

**Brief Summary Text (40):**

A substantial number of different types of compounds and compositions have been developed for use as antibacterial and antiplaque agents, e.g., benzethonium chloride and cetyl pyridinium chloride, disclosed in U.S. Pat. No. 4,110,429, or as anticalculus agents, e.g., 2-phosphono-butane 1,2,4-tricarboxylic acid, disclosed in U.S. Pat. No. 4,224,308. These compounds are designed to be used by the individual in dentifrices, dental powders, pastes, mouthwashes, nonabrasive gels, chewing gums, topical solutions and the like, e.g., see U.S. Pat. No. 4,205,061. They are designed to be used as prophylactic agents, usually without requiring a prescription or supervision during usage, e.g., see U.S. Pat. No. 4,251,507. Often they are compounded with detergents and other cleaning agents, and this cleaning action is often an important aspect of the invention, e.g., see U.S. Pat. Nos. 4,251,507 and 4,205,061. None of these compounds or compositions are designed to be used as antimicrobial agents for the treatment of periodontitis, nor are they formulated to be slow release devices for these antimicrobial agents in vivo.

**Brief Summary Text (72):**

Methods of preparing polyorganosiloxane emulsions with an average particle size of less than about 0.3 microns and polyorganosiloxane microemulsions with an average particle size of less than about 0.14 micron are described in U.S. Pat. No. 4,620,878. Preparation of oil-in-water microemulsions are described in U.S. Pat. No. 4,146,499. Specific surface active compositions used as emulsifiers with diorganopolysiloxanes to form transparent microemulsions are described in U.S. Pat. Nos. 4,0562,331 and 3,975,294, U.S. Pat. No. 3,433,780 teaches the preparation of colloid silane suspensions. See also "Chemistry and Technology of Silicones," W. Noll, pp. 428 to 431 (1968); Journal of Society of Cosmetic Chemists, 25: 609-619 (1974) and Journal of Colloid & Interface Science, 44: 242-248 (1973).

**Detailed Description Text (9):**

These same ULTRAMULSION.TM. dispersions can further contain various lipid soluble active ingredients in the dispersed silicone phase and thereby impart extended anti-plaque, anti-tartar, anti-gingivitis and/or anti-periodontia effects to various rinses, toothpastes etc. This "reservoir" effect of silicones containing active ingredients was documented with triclosan containing toothpaste by Rolla et al., in clinical studies reported in Scand. J. Dent. Res., 101: 130-138.

**Detailed Description Text (45):**

Many additional nonsoap surfactants are described in McCUTCHEON'S, DETERGENTS AND EMULSIFIERS, 1979 ANNUAL, published by Allured Publishing Corporation which is incorporated herein by reference.

**Detailed Description Paragraph Table (2):**

TABLE 2  
W/W Example No. 12 13 14 15 16 17 18 19 20 21

ORAL CARE %

Component Dimethicone

viscosity-centistokes 600,000 -- 11.6 --- 10.0 --- 2,500,000 10.0 -- 11.9 11.9 --- 14.0 4,000,000 -- 11.6 ---  
--- 30,000,000 --- 11.6 --- 50,000,000 --- 11.6 10.0 -- Lipid Soluble Component Mixture  
Of: Thymol - 24% --- Menthol - 16% 10.0 --- Eucalyptol - 36% ---  
Methyl Salicylate - 24% --- Stannous Fluoride --- 1.75 --- Triclosan --- 1.16 1.16 --- 1.16  
1.16 -- 2.0 Chorhexidine --- Metronidazole --- 1.3 --- Benzocaine --- 1.0 ---  
Surfactant 80.0 97.24 87.24 86.8 87.25 89.0 87.24 87.24 80.0 84.0 Poloxamer 338

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Other Reference Publication (37):

McCutheon's Detergents and Emulsifiers, 1979 Annual, published by Allured Publishing Corporation incorporated herein by reference.

CLAIMS:

22. An oral care composition according to claim 21, wherein the silicone contains triclosan.
28. An oral care composition according to claim 1, wherein the composition is a toothpaste containing triclosan in said silicone.
29. An oral care composition according to claim 1, wherein the composition is a dental floss where the silicone contains one or more antimicrobials selected from the group consisting of stannous fluoride, triclosan, chlorhexidine and metronidazole.

**WEST** Generate Collection 

L21: Entry 16 of 27

File: USPT

US-PAT-NO: 5651959

DOCUMENT-IDENTIFIER: US 5651959 A

TITLE: Ultramulsion based oral care compositions

DATE-ISSUED: July 29, 1997

## INVENTOR-INFORMATION:

| NAME              | CITY     | STATE | ZIP CODE | COUNTRY |
|-------------------|----------|-------|----------|---------|
| Hill; Ira D.      | Locust   | NJ    |          |         |
| Walters; Peter P. | Neshanic | NJ    |          |         |
| Brown; Dale G.    | Wharton  | TX    |          |         |

US-CL-CURRENT: 424/49; 132/321, 132/323, 424/401, 433/216, 433/217.1

## CLAIMS:

What is claimed is:

1. An oral care composition selected from the group consisting of rinses, sprays, gels, creams, toothpastes, tooth powders, dental floss, interproximal simulators, mints and chewing gum, wherein said composition contains an aqueous-free high shear or ULTRAMULSION.TM. dispersion, formed by heating a mixture of surfactant and silicone, followed by high shear mixing wherein:
  - a. the silicone is insoluble in said surfactant, has a viscosity greater than about 100,000 cs, and a particle size up to about 10 microns;
  - b. the surfactant to silicone ratio in the ULTRAMULSION dispersion is from between about 400:1 and about 1:1; and the surfactant has an orienting effect on the silicone,
  - c. the ULTRAMULSION dispersion forms stable dispersions in aqueous containing oral care compositions, and
  - d. said oral care composition exhibits enhanced substantivity to surfaces in the oral cavity while the dispersed silicone phase of said ULTRAMULSION dispersion functions as a reservoir for one or more lipid soluble

and lipid dispersible oral care active ingredients.

2. An oral care composition according to claim 1, wherein said ULTRAMULSION dispersion comprises a nonionic poloxamer surfactant and polydimethylsiloxane wherein:

a. said polydimethylsiloxane has the chemical composition  $(CH_{sub.3})_{sub.3} SiO[SiO(CH_{sub.3})_{sub.2}]_{sub.n} Si(CH_{sub.3})_{sub.3}$ , wherein n is a whole number;

b. said surfactant has the chemical composition ##STR5## wherein x, y, and x' are whole numbers; c. the viscosity of the polydimethylsiloxane ranges from between about 2.5 million and about 50 million cs;

d. the particle size of most of the polydimethylsiloxane in the ULTRAMULSION dispersion is from between about 0.1 and about 10 microns;

e. from between about 80% and 95% of said polydimethylsiloxane particles in the ULTRAMULSION dispersion are from between about 1 and about 10 microns;

f. the nonionic surfactant is a polyoxyethylene-polyoxypropylene block copolymer having a molecular weight from between about 1,100 and about 150,000;

g. the ratio of surfactant to polydimethylsiloxane is from between about 400:1 and about 1:2; and

h. the ULTRAMULSION dispersion dispersed in water based oral care composition is stable.

3. A method of manufacturing ULTRAMULSION.TM. dispersions suitable for oral care compositions said method comprising, heating said surfactant and silicone mixture in a heated, stirred vessel substantially free from water, followed by subjecting said mixture to high shear dispersion; wherein;

a. the silicone is insoluble in said surfactant, has a viscosity ranging from about 100,000 cs up to about 50 million cs, and a particle size up to about 10 microns,

b. the surfactant to silicone ratio in the high shear

dispersion is from between about 400:1 and about 1:1; and the surfactant has an orienting effect on the silicone,

c. the silicone is oriented, exhibits enhanced substantivity to surfaces in the oral cavity and functions as a reservoir for one or more lipid soluble and lipid dispersible hair care active ingredients.

4. A method according to claim 3, wherein the heated vessel is provided with an inert head of gas.

5. A method according to claim 3, wherein said high shear dispersing means is fitted with a small orifice.

6. A method according to claim 3 wherein said high shear dispersing means is an ultrasonication means.

7. A stable aqueous based oral care composition containing a dispersed therein an ULTRAMULSION dispersion comprising a nonionic poloxamer surfactant and a polydimethylsiloxane insoluble in said surfactant wherein:

a. said polydimethylsiloxane has the chemical composition  $(CH_{sub.3})_{sub.3}SiO[SiO(CH_{sub.3})_{sub.2}]_{sub.n}Si(CH_{sub.3})_{sub.3}$ , wherein n is a whole number;

b. said surfactant has the chemical composition ##STR6## wherein x, y, and x' are whole numbers; c. the viscosity of the polydimethylsiloxane ranges from between about 2.5 million and about 50 million cs;

d. the particle size of most of the polydimethylsiloxane in the ULTRAMULSION dispersion is from between about 0.1 and about 10 microns;

e. from between about 80% and 95% of said polydimethylsiloxane particles in the ULTRAMULSION dispersions are from between about 1 and about 10 microns;

f. the nonionic surfactant is a polyoxyethylene-polyoxypropylene block copolymer having a molecular weight from between about 1,100 and about 150,000;

g. the ratio of surfactant to polydimethylsiloxane is from between about 400:1 and about 1:2; and

h. the ULTRAMULSION dispersion dispersed in water is stable.

8. An oral care composition according to claim 7, wherein the ratio of said surfactant to said silicone is 9:1 and 90% of the silicone particles are from between about 1 and 3 microns.

9. An oral care composition according to claim 7, wherein the ratio of said surfactant to said silicone is 2:1 and 100% of the silicone dispersion is less than 10 microns.

10. An oral care composition according to claim 7, wherein the ratio of said surfactant to said silicone is 1:1 and the silicone particles in said ULTRAMULSION dispersion are less than 10 microns.

11. An aqueous based rinse composition containing an ULTRAMULSION dispersion comprising a nonionic poloxamer surfactant and polydimethylsiloxane insoluble in said surfactant wherein:

a. said polydimethylsiloxane has the chemical composition  $(CH_{sub.3})_{sub.3} SiO[SiO(CH_{sub.3})_{sub.2}]_{sub.n} Si(CH_{sub.3})_{sub.3}$ , wherein n is a whole number;

b. said surfactant has the chemical composition ##STR7## wherein x, y, and x' are whole numbers; c. the viscosity of the polydimethylsiloxane ranges from between about 100,000 and about 4 million cs;

d. the particle size of most of the polydimethylsiloxane in the ULTRAMULSION dispersion is from between about 0.1 and about 10 microns;

e. from between about 80% and 95% of said polydimethylsiloxane particles in the ULTRAMULSION dispersion are from between about 1 and about 10 microns;

f. the nonionic surfactant is a polyoxyethylene-polyoxypropylene block copolymer having a molecular weight from between about 1,100 and about 150,000;

g. the ratio of surfactant to polydimethylsiloxane is from between about 400:1 and about 1:2;

h. the ULTRAMULSION dispersion dispersed in water based rinse is stable, and

i. the polydimethylsiloxane contains one or more essential oil active ingredients.

12. An oral care composition according to claim 7, wherein the silicone is a polydimethylsiloxane uncoiled and oriented wherein the oxygen moieties are generally oriented in a plane distinct from that of the methyl/moieties.

13. An oral care composition according to claim 1, wherein the surfactant is selected from the group consisting of, flowable liquids of varying viscosities, pastes, prills and cast solids.

14. A method according to claim 3, wherein the high shear dispersion is achieved with high shear dispersing means selected from the group consisting of superfine dispersion means and ultrasonic dispersion means.

15. An oral care composition according to claim 7, wherein the ratio of surfactant to polydimethylsiloxane is 1:1 and at least 80% of the polydimethylsiloxane dispersed particles are between 1 and 9 microns.

16. An oral care composition according to claim 1, wherein the ratio or surfactant to polydimethylsiloxane is 9:1 and about 90% of the polydimethylsiloxane dispersed particles are between 1 and 3 microns.

17. An oral care composition according to claim 1, wherein the ratio or surfactant to polydimethylsiloxane is 2:1 and about 90% of the polydimethylsiloxane dispersed particles are between 1 and 3 microns.

18. An oral care composition according to claim 7, wherein the ratio of surfactant to polydimethylsiloxane is 4:1 and about 90% of the polydimethylsiloxane dispersed particles are between 1 and 9 microns.

19. An oral care composition according to claim 7, wherein the ratio of surfactant to polydimethylsiloxane is 9.5:0.5 and about 100% of the polydimethylsiloxane dispersed particles are between 1 and 9 microns.

20. An oral care composition according to claim 7, wherein the polydimethylsiloxane has a viscosity of 2.5 million cs and the surfactant is a solid at room temperature.

21. An oral care composition according to claim 1, wherein the silicone contains an active ingredient selected from the group consisting of, anti-plaque, anti-tartar, anti-gingivitis and anti-periodontitis active ingredients.

22. An oral care composition according to claim 21, wherein the silicone contains triclosan.

23. An oral care composition according to claim 21, wherein the silicone contains a mixture of essential oils selected from the group consisting of thymol, eucalyptol, menthol and methyl salicylate.

24. An oral care composition according to claim 21, wherein the silicone contains stannous fluoride.

25. An oral care composition according to claim 21, wherein the silicone contains chlorhexidine.

26. An oral care composition according to claim 21, wherein the silicone contains metronidazole.

27. An oral care composition according to claim 1, wherein the composition is a gel for treating periodontal pockets.

28. An oral care composition according to claim 1, wherein the composition is a toothpaste containing triclosan in said silicone.

29. An oral care composition according to claim 1, wherein the composition is a dental floss where the silicone contains one or more antimicrobials selected from the group consisting of stannous fluoride, triclosan, chlorhexidine and metronidazole.

30. An oral care composition according to claim 1,  
wherein the composition is a gel and the silicone  
contains benzocaine.

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L21: Entry 17 of 27

File: USPT

US-PAT-NO: 5645841

DOCUMENT-IDENTIFIER: US 5645841 A

TITLE: Ultramulsion based oral care rinse compositions

DATE-ISSUED: July 8, 1997

## INVENTOR-INFORMATION:

| NAME              | CITY     | STATE | ZIP CODE | COUNTRY |
|-------------------|----------|-------|----------|---------|
| Hill; Ira D.      | Locust   | NJ    |          |         |
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US-CL-CURRENT: 424/401; 132/321, 433/216, 433/217.1

## CLAIMS:

What is claimed is:

1. An oral care rinse composition wherein said composition comprises an aqueous-free high shear ULTRAMULSION dispersion, formed by heating a mixture of surfactant and silicone, followed by high shear mixing wherein:
  - a. the silicone is insoluble in said surfactant, has a viscosity of greater than about 100,000 cs and a particle size up to about 10 microns;
  - b. the surfactant to silicone ratio in the ULTRAMULSION dispersion is from between about 400:1 and about 1:1; and the surfactant has an orienting effect on the silicone;
  - c. the ULTRAMULSION dispersion forms stable dispersions in aqueous containing oral care rinse compositions, and
  - d. said rinse composition exhibits enhanced substantivity to surfaces in the oral cavity while the dispersed silicone phase of said ULTRAMULSION dispersion functions as a reservoir for additional lipid soluble and lipid dispersible oral care active ingredients, selected from the group consisting of essential oils, triclosan,

chlorhexidine phenol and its homologs, metronidazole, quaternary ammonium compounds and mixtures thereof.

2. The oral care rinse composition according to claim 1, wherein said ULTRAMULSION dispersion comprises a nonionic poloxamer surfactant and polydimethylsiloxane wherein:

a. said polydimethylsiloxane has the chemical formula  $(CH_{.sub.3}).sub.3 SiO[SiO(CH_{.sub.3}).sub.2 ].sub.n Si(CH_{.sub.3}).sub.3$ , wherein n is a whole number;

b. said surfactant has the chemical formula ##STR5## wherein x, y, and x' are whole numbers; C, the viscosity of the polydimethylsiloxane ranges from between about 2.5 million and about 50 million cs;

d. the particle size of most of the polydimethylsiloxane in the ULTRAMULSION dispersion is from between about 0.1 and about 10 microns;

e. from between about 80% and 95% of said polydimethylsiloxane particles in the ULTRAMULSION dispersion are from between about 1 and about 10 microns;

f. the nonionic surfactant is a polyoxyethylene-polyoxypropylene block copolymer having a molecular weight from between about 1,100 and about 150,000;

g. the ratio of surfactant to polydimethylsiloxane is from between about 400:1 and about 1:2; and

h. wherein the ULTRAMULSION dispersion as dispersed in an alcohol-free water based oral care rinse composition is stable.

3. A method of manufacturing ULTRAMULSION dispersions suitable for oral care rinse compositions said method comprising, heating said surfactant and silicone mixture in a heated, stirred vessel substantially free from water, followed by subjecting said mixture to high shear dispersion; wherein:

a. the silicone is insoluble in said surfactant, has a viscosity up to about 50 million cs, and a particle size up to about 10 microns,

b. the surfactant to silicone ratio in the high shear dispersion is from between about 400:1 and about 1:1; and the surfactant has an orienting effect on the silicone,

c. the silicone is oriented, exhibits enhanced substantivity to surfaces in the oral cavity and functions as a reservoir for various lipid soluble and lipid dispersible hair care active ingredients.

4. A method according to claim 3, wherein the heated vessel is provided with an inert head of gas.

5. A method according to claim 3, wherein said high shear dispersing means is fitted with a small orifice.

6. A method according to claim 3 wherein said high shear dispersing means comprises ultrasonication means.

7. A stable aqueous based oral care rinse composition containing up to 10% ethanol, and having dispersed therein an ULTRAMULSION dispersion comprising a nonionic poloxamer surfactant and a polydimethylsiloxane insoluble in said surfactant wherein:

a. said polydimethylsiloxane has the chemical formula  $(CH_{sub.3})_{sub.3} SiO[SiO(CH_{sub.3})_{sub.2}]_{sub.n} Si(CH_{sub.3})_{sub.3}$ , wherein n is a whole number;

b. said surfactant has the chemical formula ##STR6## wherein x, y, and x' are whole numbers; C. the viscosity of the polydimethylsiloxane ranges from between about 2.5 million and about 50 million cs;

d, the particle size of most of the polydimethylsiloxane in the ULTRAMULSION dispersion is from between about 0.1 and about 10 microns;

e. from between about 80% and 95% of said polydimethylsiloxane particles in the ULTRAMULSION dispersions are from between about 1 and about 10 microns;

f. the nonionic surfactant is a polyoxyethylene-polyoxypropylene block copolymer having a molecular weight from between about 1,100 and about

150,000;

g. the ratio of surfactant to polydimethylsiloxane is from between about 400:1 and about 1:2; and

h. the ULTRAMULSION dispersion as dispersed in water is stable; and

i. wherein the oral care active ingredient is an essential oil mixture containing thymol, eucalyptol, menthol and methyl salicylate.

8. A rinse composition according to claim 7, wherein the ratio of said surfactant to said silicone is 9:1 and 90% of the silicone particles are from between about 1 and 3 microns.

9. A rinse composition according to claim 7, wherein the ratio of said surfactant to said silicone is 2:1 and 100% of the silicone dispersion is less than 10 microns.

10. A rinse composition according to claim 7, wherein the ratio of said surfactant to said silicone is 1:1 and the silicone particles in said ULTRAMULSION dispersion are less than 10 microns.

11. A rinse composition containing an ULTRAMULSION dispersion comprising a nonionic poloxamer surfactant and polydimethylsiloxane insoluble in said surfactant wherein:

a. said polydimethylsiloxane has the chemical formula  $(CH_{.sub.3}).sub.3 SiO[SiO(CH_{.sub.3}).sub.2 ].sub.n Si(CH_{.sub.3}).sub.3$ , wherein n is a whole number;

b. said surfactant has the chemical formula ##STR7## wherein x, y, and x' are whole numbers; c. the viscosity of the polydimethylsiloxane ranges from between about 100,000 million and about 4 million cs;

d. the particle size of most of the polydimethylsiloxane in the ULTRAMULSION dispersion is from between about 0.1 and about 10 microns;

e. from between about 80% and 95% of said polydimethylsiloxane particles in the ULTRAMULSION

dispersion are from between about 1 and about 10 microns;

f. the nonionic surfactant is a polyoxyethylene-polyoxypropylene block copolymer having a molecular weight from between about 1,100 and about 150,000;

g. the ratio of surfactant to polydimethylsiloxane is from between about 400:1 and about 1:2;

h. the ULTRAMULSION dispersion as dispersed in the water based rinse is stable, and

i. the polydimethylsiloxane contains the essential oil active ingredients, menthol, eucalyptol, thymol and methyl salicylate.

12. A rinse composition according to claim 7, wherein the silicone is a polydimethylsiloxane uncoiled and oriented wherein the oxygen moieties are generally oriented in a plane distinct from that of the methyl/moieties.

13. A rinse composition according to claim 1, wherein the physical state of the surfactant is selected from the group consisting of, flowable liquids pastes, prills and cast solids.

14. A method according to claim 3, wherein the high shear dispersion is achieved with high shear dispersing means selected from the group consisting of superfine dispersion means and ultrasonic dispersion means.

15. A rinse composition according to claim 7, wherein the ratio of surfactant to polydimethylsiloxane is 1:1 and at least 80% of the polydimethylsiloxane dispersed particles are between 1 and 9 microns.

16. A rinse composition according to claim 1, wherein the ratio or surfactant to polydimethylsiloxane is 9:1 and about 90% of the polydimethylsiloxane dispersed particles are between 1 and 3 microns.

17. A rinse composition according to claim 1, wherein the ratio or surfactant to polydimethylsiloxane is 2:1 and about 90% of the polydimethylsiloxane dispersed particles are between 1 and 3 microns.

18. A rinse composition according to claim 7, wherein the ratio of surfactant to polydimethylsiloxane is 4:1 and about 90% of the polydimethylsiloxane dispersed particles are between 1 and 9 microns.

19. A rinse composition according to claim 7, wherein the ratio of surfactant to polydimethylsiloxane is 9.5:0.5 and about 100% of the polydimethylsiloxane dispersed particles are between 1 and 9 microns.

20. A rinse composition according to claim 7, wherein the polydimethylsiloxane has a viscosity of 2.5 million cs and the surfactant is a solid at room temperature.

21. A rinse composition according to claim 1, wherein the silicone further contains an oral care active ingredient selected from the group consisting of, anti-plaque, anti-tartar, anti-gingivitis and anti-periodontitis active ingredients.

22. A rinse composition according to claim 21, wherein the silicone further contains triclosan.

23. A rinse composition according to claim 21, wherein the silicone further contains the mixture of essential oils comprising: thymol at 0.63%, eucalyptol at 9,91%, menthol at 0.55% and methyl salicylate at 0.55%.

24. A rinse composition according to claim 21, wherein the silicone further contains a quaternary ammonium compound.

25. A rinse composition according to claim 21, wherein the silicone further contains chlorhexidine.

26. A rinse composition according to claim 21, wherein the silicone further contains metronidazole.

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L21: Entry 17 of 27

File: USPT

DOCUMENT-IDENTIFIER: US 5645841 A

TITLE: Ultramulsion based oral care rinse compositions

**Brief Summary Text (24):**

Other anti-gingivitis antimicrobials include chlorhexidine, halogenated diphenyl ethers such as triclosan, phenol and its homologs and the essential oils used in Listerine.RTM.. U.S. Pat. Nos. 4,022,880 and 4,894,220 disclose and claim various triclosan based oral care products. U.S. Pat. No. 4,894,220 includes an extensive teaching on phenol and its homologs suitable as antimicrobial agents. Metronidazole is discussed in detail in U.S. Pat. No. 4,568,535. The Listerine.RTM. essential oils are described in detail by Kornman in Journal of Periodontal Research, Supplement 1986: 5-22 (1986).

**Brief Summary Text (26):**

a. Quaternary ammonium compounds including benzethonium chloride, cetylpyridinium chloride as described by Volpe et al., Journal of Dental Research, 48: 832-841 (1969) and Gjermo et al., Journal of Periodontal Research, 5: 102-109 (1970).

**Brief Summary Text (32):**

A substantial number of different types of compounds and compositions have been developed for use as antibacterial and antiplaque agents, e.g., benzethonium chloride and cetyl pyridinium chloride, disclosed in U.S. Pat. No. 4,110,429, or as anticalculus agents, e.g., 2-phosphono-butane 1,2,4-tricarboxylic acid, disclosed in U.S. Pat. No. 4,224,308. These compounds are designed to be used by the individual in dentifrices, dental powders, pastes, mouthwashes, nonabrasive gels, chewing gums, topical solutions and the like, e.g., see U.S. Pat. No. 4,205,061. They are designed to be used as prophylactic agents, usually without requiring a prescription or supervision during usage, e.g., see U.S. Pat. No. 4,251,507. Often they are compounded with detergents and other cleaning agents, and this cleaning action is often an important aspect of the invention, e.g., see U.S. Pat. Nos. 4,251,507 and 4,205,061.

**Detailed Description Text (14):**

Methods of preparing polyorganosiloxane emulsions with an average particle size of less than about 0.3 microns and polyorganosiloxane microemulsions with an average particle size of less than about 0.14 micron are described in U.S. Pat. No. 4,620,878. Preparation of oil-in-water microemulsions are described in U.S. Pat. No. 4, 146,499. Specific surface active compositions used as emulsifiers with diorganopolysiloxanes to form transparent microemulsions are described in U.S. Pat. Nos. 4,0562,331 and 3,975,294. U.S. Pat. No. 3,433,780 teaches the preparation of colloid silane suspensions. See also "Chemistry and Technology of Silicones," W. Noll, pp. 428 to 431 (1968); Journal of Society of Cosmetic Chemists, 25: 609-619 (1974) and Journal of Colloid & Interface Science, 44: 242-248 (1973).

**Detailed Description Text (66):**

Many additional nonsoap surfactants are described in McCUTCHEON'S, DETERGENTS AND EMULSIFIERS, 1979 ANNUAL, published by Allured Publishing Corporation which is incorporated herein by reference.

**CLAIMS:**

d. said rinse composition exhibits enhanced substantivity to surfaces in the oral cavity while the dispersed silicone phase of said ULTRAMULSION dispersion functions as a reservoir for additional lipid soluble and lipid dispersible oral care active ingredients, selected from the group consisting of essential oils, triclosan, chlorhexidine phenol and its homologs, metronidazole, quaternary ammonium compounds and mixtures thereof.

22. A rinse composition according to claim 21, wherein the silicone further contains triclosan.

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L21: Entry 19 of 27

File: USPT

US-PAT-NO: 5487902

DOCUMENT-IDENTIFIER: US 5487902 A

TITLE: Chewing gum composition with accelerated, controlled release of active agents

DATE-ISSUED: January 30, 1996

## INVENTOR-INFORMATION:

| NAME              | CITY    | STATE | ZIP CODE | COUNTRY |
|-------------------|---------|-------|----------|---------|
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| Pedersen; Morten  | Radovre |       |          | DK      |

US-CL-CURRENT: 426/3; 426/4, 426/654

## CLAIMS:

We claim:

1. Chewing gum composition with accelerated, controlled release of substantially fat-soluble active agents, produced by combining

i) a chewing gum base having a resin component, wherein said resin component of the chewing gum base comprises at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin, and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, with

ii) one or more substantially fat-soluble active agents, additives, and at least one solubilizer in a quantity of 1-10 weight %, said solubilizer having an HLB value of 14-20.

2. Chewing gum composition as claimed in claim 1 wherein the resin component of the chewing gum base contains at least 40% of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin,

pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000.

3. Composition as claimed in claim 1 wherein the resin component of the chewing gum base contains a terpene resin of natural or synthetic origin.

4. Composition as claimed in claim 1 wherein the solubilizer of the composition is selected from the group consisting of lecithin, polyoxyethylene sorbitan fatty acid esters, fatty acid salts, mono and diacetyl tartaric acid esters of mono and diglycerides of edible fatty acids, citric acid esters of mono and diglycerides of edible fatty acids, saccharose esters of fatty acids, polyglycerol esters of fatty acids, polyglycerolesters of internal esterified castor oil acid, sodium stearoyllactylate, sodium lauryl sulfate, sorbitan esters of fatty acids, polyoxyethylated hydrogenated castor oil, blockcopolymers of ethylene oxide and propylene oxide, polyoxyethylene fatty alcohol ether, sorbitan ester of fatty acid and polyoxyethylene steraric acid ester.

5. Chewing gum composition as claimed in claim 4 wherein the solubilizer is selected from the group consisting of polyoxyethylene stearate, polyoxyethylene sorbitan fatty acid ester, mono and diacetyl tartaric acid esters of mono and diglycerides of edible fatty acids, citric acid ester of mono and diglycerides of edible fatty acids, sodium stearoyllactylate, sodium laurylsulfate, polyoxyethylated hydrogenated castor oil, blockcopolymers of ethylene oxide and propylene oxide and polyoxyethylene fatty alcohol ether.

6. Chewing gum composition as claimed in claim 1 wherein 3-6 weight % solubilizer is added to the chewing gum composition.

7. Chewing gum composition as claimed in claim 1 wherein the composition further contains up to 60 weight % of at least one carrier, which carrier forms a solid dispersion together with the active agent.

8. Composition as claimed in claim 7 wherein the carrier

is selected from the group consisting of polyethylene glycol and polyvinyl pyrrolidone.

9. Composition as claimed in claim 8 wherein the carrier is polyethyleneglycol 1000-20,000.

10. Composition as claimed in claim 1 wherein the active agent has a water-solubility of less than 10 g/100 ml.

11. Chewing gum composition as claimed in claim 10 wherein the active agent is selected from the group consisting of dietary supplement, oral and dental compositions, antiseptics, pH adjusting agents, anti-smoking agents, sweeteners, flavorings, aroma agents and medicines.

12. Chewing gum composition as claimed in claim 11 wherein the active agent is selected from the group consisting of paracetamol, benzocaine, cinnarizine, menthol, carvone, caffeine, chlorhexidine-diacetate, cyclizine hydrochloride, 1,8-cineol, nandrolone, miconazole, nystatin, aspartame, sodium fluoride, nicotine, saccharin, cetylpyridinium chloride, other quaternary ammonium-compounds, vitamin E, vitamin A, vitamin D, glibenclamide or derivatives thereof, progesterone, acetylsalicylic acid, dimenhydrinate, cyclizine, metronidazole, sodium hydrogencarbonate, the active components from ginkgo, the active components from propolis, the active components from ginseng, methadone, oil of peppermint, salicylamide, hydrocortisone and astemizole.

13. Process for the preparation of a chewing gum composition as claimed in claim 1 comprising the steps of preparing a chewing gum base on the basis of conventional chewing gum base ingredients including a resin portion, wherein the resin portion comprises at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, and then preparing a chewing gum composition while adding at

least one substantially fat-soluble active agent and 1-10 weight % of at least one solubilizer, said solubilizer having an HLB value of 14-20.

14. Process as claimed in claim 13 comprising the further step of mixing the active agent intimately with the solubilizer to form a mixture and then admixing the mixture to the chewing gum composition.

15. Process as claimed in claim 14 comprising the further step of forming a solid dispersion of the active agent in a carrier prior to mixing the active agent with the solubilizer.

16. Process for making a chewing gum composition, comprising the step of combining a solubilizer for accelerated, controlled release of substantially fat-soluble active agents with a composition comprising a chewing gum base having a resin component comprising at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, said solubilizer being present in a quantity of 1-10 weight % of said chewing gum composition and having an HLB value of 14-20.

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L21: Entry 19 of 27

File: USPT

DOCUMENT-IDENTIFIER: US 5487902 A

TITLE: Chewing gum composition with accelerated, controlled release of active agents

Brief Summary Text (28):

It has generally been assumed that only small quantities of surfactant can be added to chewing gum and from a theoretical point of view it would be assumed that the addition of larger quantities would usually result in extreme softening and solubilization of the entire chewing gum base portion. However, this has been found not to be the case when as chewing gum base one is selected wherein the resin portion consists of at least 25 weight % of the above particularly suitable resins. In some cases such chewing gum bases may per se contain a surfactant with a slight solubilizing effect, however usually only in small concentrations such as for instance 0-12 weight % of the gum base and ususally only from 0 to 6 weight % thereof. Such surfactants, usually in the form of emulsifiers, affect the gum base by emulsifying water thereinto. It has turned out that these emulsifiers may have a slight solubilizing effect on an active agent added to the chewing gum, but this effect is usually of small extent compared to the solubilizing effect obtained by the solubilizers suggested according to the invention. The quantities of solubilizers stated in the present specification and claims do not comprise such optional surfactants conventionally already contained in the chewing gum base used as starting material.

Brief Summary Text (38):

In principle, all types of surfactants which do not display an unacceptable toxicity in the concentration used can be used as solubilizer. As an example of types of surfactants to be used as solubilizer in a chewing gum composition according to the invention reference is made to H. P. Fiedler, Lexikon der Hilfstoffe fur Pharmacie, Kosmetik und Angrenzende Gebiete, page 63-64 (1981) and the lists of approved food emulsifiers of the individual countries.

Brief Summary Text (40):

When selecting a solubilizer, the fact that such solubilizer must have an acceptable taste must also be taken into account. Therefore it will be natural to find the suitable substances among approvable food emulsifiers and emulsifiers acceptable for use in medicines for oral administration.

Brief Summary Text (41):

Suitable solubilizers include polyoxyethylene stearate, polyoxyethylene sorbitan fatty acid esters, fatty acid salts, mono and diacetyl tartaric acid esters of mono and diglycerides of edible fatty acids, citric acid esters of mono and diglycerides of edible fatty acids, saccharose esters of fatty acids, polyglycerol esters of fatty acids, polyglycerol esters of interesterified castor oil acid (E476), sodium stearoyllatylate, sodium lauryl sulfate and sorbitan esters of fatty acids, which solubilizers are all known for use as food emulsifiers, and polyoxyethylated hydrogenated castor oil (for instance such sold under the trade name CREMOPHOR), blockcopolymers of ethylene oxide and propylene oxide (for instance as sold under the trade name PLURONIC or the trade name POLOXAMER), polyoxyethylene fatty alcohol ethers, polyoxyethylene sorbitan fatty acid esters, sorbitan esters of fatty acids and polyoxyethylene steraric acid ester, all known in the EEC for use as pharmaceutical-cosmetical emulsifiers.

Brief Summary Text (44):

The gum base used in the chewing gum according to the invention is generally prepared in a conventional manner by heating and mixing the different ingredients such as elastomers, resins, inorganic fillers, waxes, fats and emulsifiers etc.

Brief Summary Text (47):

To soften the gum base further and to provide it with water binding properties, which gives the gum bases a pleasant smooth surface and reduces its adhesive properties, one or more emulsifiers may usually be added. Mono and diglycerides of edible fatty acids, lactic acid esters and acetic acid esters of mono and diglycerides of edible fatty acids, sugar esters of edible fatty acids, Na-, K-, Mg- and Ca-stearates, lecithin, hydroxylated lecithin and the like may be mentioned as examples of legal and conventionally used emulsifiers added to the chewing gum base.

Brief Summary Text (48):

As mentioned earlier, said emulsifiers, which are conventionally used in quantities of 0-12 weight %, preferably 0-6 weight % of the gum base, may have a solubilizing effect on the active agent, later added to a chewing gum prepared on the basis of such emulsifier containing chewing gum base. However, this effect is usually of a small extent compared to the effect of the solubilizers which in practice of the present invention usually are added during the preparation of the chewing gum and not to the chewing gum base.

Brief Summary Text (61):

The invention has proved advantageous for controlled, accelerated release of active agents selected among the group dietary supplements, oral and dental compositions, antiseptic agents, pH adjusting agents, anti-smoking agents, sweeteners, flavourings, aroma agents or drugs, such as for instance paracetamol, benzocaine, cinnarizine, menthol, carvone, caffeine, chlorhexidine-di-acetate, cyclizine hydrochloride, 1,8-cineol, nandrolone, miconazole, nystatin, aspartame, sodium fluoride, nicotine, saccharin, cetylpyridinium chloride, other quaternary ammonium compounds, vitamin E, vitamin A, vitamin D, glibenclamide or derivatives thereof, progesterone, acetylsalicylic acid, dimenhydrinate, cyclizine, metronidazole, sodium hydrogencarbonate, the active components from ginkgo, the active components from propolis, the active components from ginseng, methadone, oil of peppermint, salicylamide, hydrocortisone or astemizole.

Brief Summary Text (66):

Examples of active agents in the form of antiseptics are for instance salts and compounds of guanidine and biguanidine (for instance chlorhexidine diacetate) and the following types of substances with limited water-solubility: quaternary ammonium compounds (for instance ceramine, chloroxylenol, crystal violet, chloramine), aldehydes (for instance paraformaldehyde), compounds of dequaline, polynoxyline, phenols (for instance thymol, para chlorophenol, cresol) hexachlorophene, salicylic anilide compounds, triclosan, halogenes (iodine, iodophores, chloroamine, dichlorocyanuric acid salts), alcohols (3,4 dichlorobenzyl alcohol, benzyl alcohol, phenoxyethanol, phenylethanol), cf. furthermore Martindale, The Extra Pharmacopoeia, 28th edition, page 547-578; metal salts, complexes and compounds with limited water-solubility, such as aluminium salts, (for instance aluminium potassium sulfate AlK(SO<sub>4</sub>)<sub>2</sub>.12 H<sub>2</sub>O) and furthermore salts, complexes and compounds of boron, barium, strontium, iron, calcium, zinc, (zinc acetate, zinc chloride, zinc gluconate), copper (copper chloride, copper sulfate), lead, silver, magnesium, sodium, potassium, lithium, molybdenum, vanadium should be included; other compositions for the care of mouth and teeth: for instance; salts, complexes and compounds containing fluorine (such as sodium fluoride, sodium monofluorophosphate, aminofluorides, stannous fluoride), phosphates, carbonates and selenium.

## CLAIMS:

12. Chewing gum composition as claimed in claim 11 wherein the active agent is selected from the group consisting of paracetamol, benzocaine, cinnarizine, menthol, carvone, caffeine, chlorhexidine-diacetate, cyclizine hydrochloride, 1,8-cineol, nandrolone, miconazole, nystatin, aspartame, sodium fluoride, nicotine, saccharin, cetylpyridinium chloride, other quaternary ammonium-compounds, vitamin E, vitamin A, vitamin D, glibenclamide or derivatives thereof, progesterone, acetylsalicylic acid, dimenhydrinate, cyclizine, metronidazole, sodium hydrogencarbonate, the active components from ginkgo, the active components from propolis, the active components from ginseng, methadone, oil of peppermint, salicylamide, hydrocortisone and astemizole.

**WEST**  

L21: Entry 20 of 27

File: USPT

US-PAT-NO: 5380530

DOCUMENT-IDENTIFIER: US 5380530 A

TITLE: Oral care composition coated gum

DATE-ISSUED: January 10, 1995

## INVENTOR-INFORMATION:

| NAME         | CITY   | STATE | ZIP CODE | COUNTRY |
|--------------|--------|-------|----------|---------|
| Hill; Ira D. | Locust | NJ    |          |         |

US-CL-CURRENT: 424/440; 424/439, 424/48, 514/900, 514/902, 514/975

## CLAIMS:

What is claimed is:

1. A therapeutic preparation effective in treating localized conditions of the mouth, teeth and gums, said conditions being selected from the group consisting of plaque, gingivitis, hypersensitivity, stomatitis and microbes in the mouth, said preparation being in the form of a chewing gum wherein:

A. the chewing gum is coated with an emulsion comprising an ingestible surfactant-emulsifier and a polydimethyl siloxane insoluble in said surfactant-emulsifier,

B. the emulsion is applied to the chewing gum by means of a coating process selected from the group of coating processes consisting of printing, film coating, adhesive applications and textile dyeing, and

C. the emulsion coating on said gum is releasable during chewing, at a therapeutic effective rate and in a therapeutic effective amount.

2. The therapeutic preparation according to claim 1, wherein the emulsion coating comprises a therapeutic substance selected from the group consisting of antimicrobials, microbially active stannous fluoride, chlorhexidine, triclosan, zinc chloride, cationic

antimicrobial agents, cetylpyridinium chloride, antioxidants, propyl gallate, enzymes, antibiotics, tetracycline, mineral salts, pectin, strontium chloride, potassium nitrate, metronidazole benzocaine, analgesics for mouth and throat discomfort, sanguinarine extract, stearoyl-2-lactate, cough and cold remedies, and remineralizing substances.

3. The therapeutic preparation according to claim 1, wherein said coating releases during chewing at an effective plaque disrupting rate and in an effective plaque disrupting amount.

4. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride, releasable at an effective ant gingivitis rate and in an effective ant gingivitis amount.

5. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective hypersensitivity treatment rate and in an effective hypersensitivity treatment level.

6. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises microbially active stannous fluoride releasable at an effective stomatitis treatment rate and at an effective stomatitis treatment level.

7. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises chlorhexidine releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

8. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises triclosan releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

9. The coated chewing gum according to claim 1, wherein the ingestible surfactant is selected from the group consisting of:

sodium lauryl sulfate,

sodium lauryl sarcosinate,  
polyethylene glycol stearate,  
polyethylene glycol monostearate,  
coconut monoglyceride sulfonates,  
block copolymers of polyoxyethylene and polyoxybutylene,  
alkylpolyglycol ether carboxylates,  
polyethylene derivatives of sorbitan esters,  
propoxylated cetyl alcohol,  
block copolymers comprising a congeneric mixture of  
conjugated polyoxybutylene and polyoxyethylene compounds  
having as a hydrophobe a polyoxybutylene polymer of at  
least 1200 molecular weight,  
a salt of a fatty acid (soap powder), and emulsified  
polyethylene glycols, polyethylene glycol oleate,  
polyethylene glycol beeswax and monomethyl ether  
polyethylene glycol.

10. The coated chewing gum according to claim 1, wherein  
the polydimethyl siloxane has the general structure:  
##STR2## wherein n represents a whole number from between  
about 100 and 5,000, and the polydimethyl siloxane has a  
viscosity from between about 350 and about 12,500  
centistokes.

11. A coated chewing gum according to claim 1, wherein  
the coating is applied to the chewing gum at from between  
about 0.5% and about 6% by weight of the gum, or from  
between about 10 mg/piece and about 100 mg/piece.

12. A coated chewing gum according to claim 9, wherein  
the ingestible surfactant is a  
polyoxyethylene-polyoxybutylene block copolymer.

13. A chewing gum according to claim 3, wherein the  
plaque disrupting, emulsion coating is applied to the  
chewing gum at an elevated temperature by means of a

printing process.

14. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a film coating process.

15. A chewing gum according to claim 3, wherein the plaque disrupting, melt-emulsion coating is applied to the chewing gum at an elevated temperature by means of an adhesive application process.

16. A chewing gum according to claim 3, wherein the plaque disrupting, emulsion coating is applied to the chewing gum at an elevated temperature by means of a textile dyeing process.

17. A method of manufacturing a therapeutic chewing gum comprising, preparing a sheet of chewing gum, coating said sheet of gum with an emulsion maintained at a temperature between about 100.degree. C. and about 200.degree. C., wherein:

a. the emulsion comprises an ingestible surfactant or emulsifier and a polydimethyl siloxane insoluble in said surfactant or emulsifier, and

b. the coating process is selected from the group of coating processes consisting of printing, film making, adhesive applications and textile dyeing.

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L21: Entry 20 of 27

File: USPT

DOCUMENT-IDENTIFIER: US 5380530 A  
TITLE: Oral care composition coated gum

Brief Summary Text (76):

A third embodiment of the invention comprises therapeutic chewing gums characterized by an emulsion coating as described earlier, wherein the emulsion coating contains a therapeutic substance such as stannous fluoride and the emulsion coating-therapeutic substance mixture is released into the oral cavity from the gum, during chewing, at a predetermined rate and in a predetermined amount. Other therapeutic substances include: oral care medicaments such as chlorhexidine, triclosan, potassium nitrate, various quaternaries, the active essential oils in Listerine.RTM., and the like, various antibiotics, analgesics, oral discomfort relief active ingredients, and the like.

Brief Summary Text (80):

Suitable surfactants and emulsifiers for use in the present emulsion coating for gum include:

Brief Summary Text (95):

Suitable emulsifiers for use in the present emulsion coating include various polyethylene glycols commonly referred to as PEG and PEG oleate, PEG Beeswax, mono-methylether polyethylene glycol, and the like.

Brief Summary Text (104):

(8) are insoluble in the surfactant or emulsifiers used herein.

Brief Summary Text (115):

The combination of certain surfactants and/or emulsifiers with certain polydimethyl siloxanes wherein the latter is inherently insoluble in the former, in a coating on a chewing gum is novel. The plaque disrupting results obtained with chewing gum containing this coating is novel. Furthermore, the surfactant-polydimethyl siloxane-saliva mixture obtained in the mouth is ingestible and can be pleasantly swallowed, which further distinguishes this plaque fighting gum from typical plaque fighting products such as dentifrices used with a toothbrush and most rinses and prerinse. For example, unlike typical surfactants used in dentifrice pastes, the surfactants of the present invention do not fill the mouth with foam and can be pleasantly swallowed which is necessary for the high frequency cleaning feature of the coated chewing gums of the present invention.

Brief Summary Text (132):

triclosan,

Brief Summary Text (135):

as cetylpyridinium chloride,

Brief Summary Paragraph Table (2):

| TABLE II                                                                                                                                                                                                                                                                           | THERAPEUTIC                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| CHEWING GUMS                                                                                                                                                                                                                                                                       | Type of Therapeutic Substance Added to Emulsion Coating (% by weight) |
| From Table I                                                                                                                                                                                                                                                                       | Coating Mixture Abrasive for                                          |
| cleaning and EXAMPLE                                                                                                                                                                                                                                                               | tartar control Antimicrobial Antibiotic Dry Mouth Oral Discomfort     |
| (qs to 100%)                                                                                                                                                                                                                                                                       | 10. #1 silica dentifrice grade                                        |
| (10-30) 11 #3 stannous fluoride (1.2-4.0) 12 #4 Mineral salts (saliva equiv.) sodium fluoride (2 ppm - final) 13 #5 tetracycline (0.5-2.5) 14 #6 benzocaine (4.0-10.0) 15 #5 potassium nitrate (5.0) 16 #3 pectin (5.0-15.0) 17 #8 <u>triclosan</u> (0.2-1.0) 18 #9 Kaolin (10-30) |                                                                       |

## CLAIMS:

2. The therapeutic preparation according to claim 1, wherein the emulsion coating comprises a therapeutic substance selected from the group consisting of antimicrobials, microbially active stannous fluoride, chlorhexidine, triclosan, zinc chloride,

cationic antimicrobial agents, cetylpyridinium chloride, antioxidants, propyl gallate, enzymes, antibiotics, tetracycline, mineral salts, pectin, strontium chloride, potassium nitrate, metronidazole benzocaine, analgesics for mouth and throat discomfort, sanguinarine extract, stearoyl-2-lactate, cough and cold remedies, and remineralizing substances.

8. The therapeutic preparation according to claim 2, wherein the emulsion coating comprises triclosan releasable at an effective gingivitis treatment rate and at an effective gingivitis treatment level.

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L21: Entry 25 of 27

File: USPT

US-PAT-NO: 5188822

DOCUMENT-IDENTIFIER: US 5188822 A

TITLE: Oral compositions containing an aminosilicone and a lipophilic compound

DATE-ISSUED: February 23, 1993

## INVENTOR-INFORMATION:

| NAME              | CITY           | STATE | ZIP CODE | COUNTRY |
|-------------------|----------------|-------|----------|---------|
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US-CL-CURRENT: 424/52; 424/405, 424/53, 424/54, 424/55, 424/643, 514/63

## CLAIMS:

What is claimed is:

1. An oral composition comprising an oil-in-water emulsion comprising:

(a) an oil phase comprising a noncyclic, hydrophobic aminoalkyl silicone and an orally acceptable lipophilic compound, the lipophilic compound being soluble in the aminoalkyl silicone and selected from the group consisting of an antimicrobial compound, a flavorant and mixtures thereof; and

(b) an aqueous phase comprising an emulsifier, wherein the aminoalkyl silicone is employed in the amount effective to form a hydrophobic layer on the teeth surface and the lipophilic compound is present in an amount to provide a benefit selected from the group consisting of plaque and/or calculus formation inhibition, prolonged flavor perception, malodor masking benefit, sustained breath refreshing benefit and combinations thereof

wherein the aminoalkylsilicone is comprised of two basic units:

(1) R.sup.1).sub.m --(R).sub.n --SiO.sub.(4-m-n)/2  
wherein m+n is 1, 2 or 3; n is 1, 2, or 3; m is 0, 1, or 2; and

(2) (R.sup.1).sub.a (R.sup.2).sub.b SiO.sub.(4-a-b)/2  
wherein a+b is 1, 2, or 3, and a and b are integers

wherein R.sup.1 and R.sup.2 are hydrocarbons or fluorinated hydrocarbons of 1 to 10 carbons, hydroxyl, alkoxy, hydrogen or acetoxy, and R is ##STR13## wherein R.sup.3 is a divalent alkylene of 1-20 carbon atoms or a hydrocarbon of 1-20 carbon atoms containing oxygen atoms, R.sup.4, R.sup.5 and R.sup.6 may be different or the same and are selected from the group consisting of H, hydrocarbons of 1-20 carbons, and hydrocarbons of 1-20 carbons containing N and/or O atoms, and X.sup.- is a monovalent anion, said aminoalkyl silicone including 60% or fewer by repeat unit of unit (1).

2. The composition of claim 1 wherein the aminoalkyl silicone has a molecular weight of at least 5,000.

3. The composition of claim 1 wherein the aminoalkyl silicone has a molecular weight from 5,000 to 100,000.

4. The composition of claim 1 wherein R.sup.1 is -methyl, -ethyl, -phenyl, -vinyl, trifluoropropyl or -cyano.

5. The composition of claim 1 wherein R.sup.2 is -methyl, -ethyl, -phenyl, -vinyl, trifluoropropyl or -cyano.

6. The composition of claim 1 wherein R.sup.3 is a divalent alkylene having from 3 to 5 carbon atoms.

7. The composition of claim 1 wherein R is selected from the group consisting of:

--(CH.sub.2).sub.3 --NH.sub.2 and --(CH.sub.2).sub.3  
--NHCH.sub.2 CH.sub.2 NH.sub.2.

8. The composition of claim 1 wherein R.sup.1 is selected from the group consisting of: ##STR14##

9. The composition of claim 1 wherein the lipophilic compound is a flavorant selected from the group consisting of wintergreen oil, oregano oil, hay leaf oil,

peppermint oil, spearmint oil, clove oil, sage oil, sassafras oil, lemon oil, orange oil, anise oil, benzaldehyde, bitter almond oil, camphor, cedar leaf oil, marjoram oil, citronella oil, lavender oil, mustard oil, pine oil, pine needle oil, rosemary oil, thyme oil, cinnamon leaf oil, and mixtures thereof.

10. The composition of claim 1 wherein the lipophilic compound is the antimicrobial compound.

11. The composition of claim 10 wherein the antimicrobial compound is selected from the group consisting of thymol, menthol, triclosan, 4-hexylresorcinol, phenol, eucalyptol, benzoic acid, benzoyl peroxide, butyl paraben, methyl paraben, propyl paraben, salicylamides, and mixtures thereof.

12. The composition of claim 1 wherein the pH of the composition is at least 5.0.

13. The composition of claim 1 wherein the pH of the composition is at least 7.0.

14. The composition of claim 1 wherein the emulsifier is selected from the group consisting of a nonionic emulsifier, a cationic emulsifier, and mixtures thereof.

15. The composition of claim 14 wherein the emulsifier is the nonionic emulsifier.

16. The composition of claim 15 wherein the nonionic emulsifier is amine oxide.

17. The composition of claim 1 wherein the composition comprises from about 0.1% to about 20% of the aminoalkyl silicone and from about 0.01% to about 10% of the lipophilic compound.

18. The composition of claim 1 wherein the amount of the emulsifier is from about 0.05% to about 10%.

19. The composition of claim 1 wherein the composition further comprises a source of fluoride ion.

20. The composition of claim 1 wherein the composition further comprises a source of zinc ion.

21. A method of delivering a lipophilic compound to the teeth surface comprising applying into oral cavity the composition of claim 1.

22. The method of claim 21 wherein the composition is applied by brushing or chewing.

23. The method of claim 21 wherein the composition is applied separately from a regular dentifrice treatment.

24. A process of preparing an oral composition comprising an oil-in-water emulsion, the process comprising the steps of:

(a) preparing a mixture comprising an aminoalkyl silicone and a lipophilic compound to obtain an oil phase;

(b) preparing an aqueous phase comprising an emulsifier;

(c) adding the oil phase to an aqueous phase, with stirring, to obtain the oil-in-water emulsion; and

wherein the aminoalkyl silicone is comprised of two basic units:

(1)  $(R_{\sup{1}})^{m-n} SiO^{(4-m-n)/2}$   
wherein m+n is 1, 2 or 3; n is 1, 2, or 3; m is 0, 1, or 2; and

(2)  $(R_{\sup{1}})^{a-b} (R_{\sup{2}})^{b-a} SiO^{(4-a-b)/2}$   
wherein a+b is 1, 2, or 3, and a and b are integers

wherein R<sup>1</sup> and R<sup>2</sup> are hydrocarbons or fluorinated hydrocarbons of 1 to 10 carbons, hydroxyl, alkoxy, hydrogen or acetoxy, and R is ##STR15## wherein R<sup>3</sup> is a divalent alkylene of 1-20 carbon atoms or a hydrocarbon of 1-20 carbon atoms containing oxygen atoms, R<sup>4</sup>, R<sup>5</sup> and R<sup>6</sup> may be different or the same and are selected from the group consisting of H, hydrocarbons of 1-20 carbons, and hydrocarbons of 1-20 carbons containing N and/or O atoms, and X<sup>-</sup> is a monovalent anion, said aminoalkyl silicone including 60% or fewer by repeat unit of unit (1) and the lipophilic compound is selected from the group consisting of an antimicrobial compound, a flavorant and mixtures thereof,

wherein, the aminoalkyl silicone is present in an amount effective to form a hydrophobic layer on teeth surfaces and the lipophilic compound is present in an amount to provide a benefit selected from the group consisting of plaque and/or calculus formation inhibition, prolonged flavor perception, malodor masking benefit, sustained breath refreshing benefit and combinations thereof.

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L21: Entry 25 of 27

File: USPT

DOCUMENT-IDENTIFIER: US 5188822 A

TITLE: Oral compositions containing an aminosilicone and a lipophilic compound

**Brief Summary Text (80):**

In one preferred embodiment of the present invention the lipophilic compound is a lipophilic antimicrobial agent. Suitable antimicrobial agents include but are not limited to thymol, menthol, triclosan, (Irgasan DP300.RTM. ex Ciba-Geigy), 4-hexylresorcinol, phenol, eucalyptol, benzoic acid, benzoyl peroxide, butyl paraben, methyl paraben, propyl paraben, and mixtures thereof. Salicylamides (including salicylanilides and salicylanilides with halogens as substituents) are also lipophilic and may be suitably employed in the oil phase of the present emulsions. Coburn et al, U.S. Pat. Nos. 4,358,443 and 4,287,191 describe salicylamides and are incorporated by reference herein.

**Brief Summary Text (84):**

When the lipophilic compound is a phenolic antimicrobial (e.g., thymol or triclosan), preferably at least 0.05%, most preferably 0.1 to 3%, is included in the compositions in order to provide an antimicrobial benefit at an optimum cost. Salicylamides are typically employed in the amount of at least 0.01%, preferably from 0.05 to 3%, most preferably from 0.1 to 2%. When the lipophilic compound is a flavoring agent, the amount typically ranges from 0.01 to 5%, preferably from 0.1 to 3%. It should be noted that some lipophilic compounds, for instance menthol, may perform both an antimicrobial and a flavoring function.

**Brief Summary Text (85):**

The aqueous phase of the oil-in-water emulsion of the present compositions contains an emulsifier. Nonionic surfactants and/or cationic surfactants are preferred emulsifiers, although anionics such as sarcosinates may also be used. Surfactants must be orally acceptable.

**Brief Summary Text (92):**

(vi) cationic surfactants may be quaternary ammonium compounds including one C<sub>sub</sub>.8 -C<sub>sub</sub>.18 alkyl chain. Examples include cetyl pyridinium chloride, cetyl trimethyl ammonium bromide, di-isobutyl phenoxy ethoxy ethyl-dimethyl benzyl ammonium chloride and coconut alkyl trimethyl ammonium nitrate

**Detailed Description Text (51):**

Emulsions containing 1.0% of aminoalkyl silicone, thymol and various emulsifiers were prepared as follows:

**Detailed Description Paragraph Table (6):**

|                                                  | % Plaque Emulsion Reduction                             |
|--------------------------------------------------|---------------------------------------------------------|
| 1% silicone; 0.3% thymol; 0.35% emulsifier 80    | 1% silicone; 0.3% menthol; 0.35% emulsifier 7           |
| 1% silicone; 0.3% eucalyptol; 0.35% emulsifier 5 | 2% silicone; 0.5% <u>triclosan</u> ; 0.7% emulsifier 28 |

**Detailed Description Paragraph Table (15):**

| Ingredient                                                                             | Tradename             | Supplier                                              |
|----------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------|
| Thymol                                                                                 | Sigma Chemical        | Menthol " Eucalyptol " <u>Triclosan</u> Irgasan DP300 |
| .RTM. Ciba-Geigy Amine Oxide (cocoalkyl Aromox DMMC-W .RTM. AKZO dimethyl amine oxide) | Silica 63X Syloid 63x |                                                       |
| .RTM. W. R. Grace Silica 244 Syloid 244 .RTM. "                                        |                       |                                                       |

**CLAIMS:**

11. The composition of claim 10 wherein the antimicrobial compound is selected from the group consisting of thymol, menthol, triclosan, 4-hexylresorcinol, phenol, eucalyptol, benzoic acid, benzoyl peroxide, butyl paraben, methyl paraben, propyl paraben, salicylamides, and mixtures thereof.

**WEST**  

L16: Entry 1 of 53

File: USPT

US-PAT-NO: 6355265

DOCUMENT-IDENTIFIER: US 6355265 B1

TITLE: Over-coated chewing gum formulations

DATE-ISSUED: March 12, 2002

## INVENTOR-INFORMATION:

| NAME                    | CITY        | STATE | ZIP CODE | COUNTRY |
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US-CL-CURRENT: 424/440; 424/464, 424/48

## CLAIMS:

We claim:

1. A chewing gum comprising:

a gum center comprising a water soluble portion and a water insoluble portion; and

a coating comprising a medicament that surrounds the gum center, the coating comprising at least 50% by weight of the chewing gum product.

2. The chewing gum of claim 1 wherein the medicament is selected from the group consisting of analgesics, muscle relaxants, antibiotics, antivirals, stimulants, antihistamines, decongestants, anti-inflammatory agents, antacids, psychotherapeutic agents, insulin, vitamins, minerals, and cardiovascular agents.

3. The chewing gum of claim 1 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

4. The chewing gum of claim 3 wherein the taste masking agent is selected from the group consisting of zinc

gluconate, ethyl maltol, glycine, acesulfame-k, aspartame, saccharin, fructose, xylitol, isomalt, maltitol, spray dried licorice root, glycrrhizine, sodium gluconate, glucono delta-lactone, ethyl vanillin, dextrose, sucralose, vanillin, and ethyl maltol.

5. The chewing gum of claim 3 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

6. The chewing gum of claim 1 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener selected from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

7. The chewing gum of claim 1 wherein the gum center includes at least 50% by weight water-insoluble gum base.

8. The chewing gum of claim 1 wherein the coating does not have a shellac layer.

9. The chewing gum of claim 1 wherein the gum center and coating are sugar-free.

10. A product including a medicament comprising:

a gum center comprising a water soluble portion and a water insoluble portion, the water insoluble portion comprising at least 30% by weight of the gum center; and

a coating that at least substantially surrounds the gum center and comprises a medicament and a high-intensity sweetener, the coating comprising at least 50% by weight of the product.

11. The product of claim 10 wherein the medicament is selected from the group consisting of analgesics, muscle relaxants, antibiotics, antivirals, stimulants, antihistamines, decongestants, anti-inflammatories, antacids, psychotherapeutic agents, insulin, vitamins, minerals, and cardiovascular agents.

12. The product of claim 10 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

13. The product of claim 10 wherein the taste masking agent is selected from the group consisting of zinc gluconate, ethyl maltol, glycine, acesulfame-k, aspartame, saccharin, fructose, xylitol, isomalt, maltitol, spray dried licorice root, glycerrhizine, sodium gluconate, glucono delta-lactone, ethyl vanillin, dextrose, sucralose, vanillin, and ethyl maltol.

14. The product of claim 10 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

15. The product of claim 10 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener chosen from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

16. The product of claim 10 wherein the coating comprises at least 70% by weight powder when it is applied to the gum center.

17. The product of claim 10 wherein the product is sugar-free.

18. The chewing gum of claim 10 wherein the coating does not have a shellac layer.

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L16: Entry 1 of 53

File: USPT

DOCUMENT-IDENTIFIER: US 6355265 B1  
TITLE: Over-coated chewing gum formulations

**Brief Summary Text (22):**

In an embodiment, the coating includes a high-intensity sweetener. In a further embodiment, the high-intensity sweetener is chosen from the group consisting of aspartame, sucralose, and acesulfame-K.

**Detailed Description Text (6):**

Preferably, the coating will include masking agents. In this regard, high-intensity sweeteners and appropriate flavors can be used to mask any off notes that are present due to the medicament or agent. It has been found that with respect to certain medicaments or agents that may have an astringent or bitter taste that by adding a masking agent to the formulation, that a much more palatable formulation, including the medicament, can be provided. In this regard, even though the medicament in for example, its powder form may be bitter or have an offensive taste, the matrix used as the coating of the present invention, including the masking agent, will afford a product having acceptable organoleptic properties. For example, it has been surprisingly found that by solubilizing a powdered matrix of medicament and masking agent, this increases the ability of the masking agent to cover up bitter and bad flavors produced by the medicament or agent. By selecting specific masking agents based on the bad or off taste produced by the medicament, one can provide a palatable formulation.

**Detailed Description Text (7):**

For example, if one is attempting to cover an astringent flavor such as aspirin, one could use masking agents found to be effective against astringency such as fructose and high-intensity sweeteners, e.g. saccharin, aspartame, sucralose, and acesulfame-k. In the case of a moderately bitter active ingredient, such as caffeine, one would use ingredients such as glycine, ethyl maltol, zinc gluconate, licorice root powder, high-intensity sweeteners, etc. In the case of a very bad tasting active ingredient such as acetaminophen it has been found that peppermint functions very well, but, may need to be augmented with a high-intensity sweetener, such as, for example, aspartame.

**Detailed Description Text (10):**

In a preferred embodiment, the coating includes a high-intensity sweetener such as aspartame, sucralose, and acesulfame-k. Preferably, the high-intensity sweetener comprises approximately 0.5% to about 5% by weight of the coating.

**Detailed Description Text (26):**

In an embodiment of the coating, dextrose or sucrose or combinations thereof function as the main ingredient. In a preferred embodiment, dextrose is utilized and the dextrose comprises approximately 50 to about 90% of the coating. The active ingredients or medicaments, in the coating may comprise as much as 30% of the coating down to very small amounts as long as the medication is efficacious. In a preferred embodiment, the flavors are powdered flavors and can range from 0.1% to approximately 5%. High-intensity sweeteners such as aspartame, sucralose, and acesulfame-k can also be used in the coating and range from approximately 0.5 to about 5% of the coating. As noted above, these high-intensity sweeteners are excellent masking agents.

**Detailed Description Text (39):**

In addition to a water insoluble gum base portion, a typical chewing gum composition includes a water soluble bulk portion and one or more flavoring agents. The water soluble portion can include bulk sweeteners, high-intensity sweeteners, flavoring agents, softeners, emulsifiers, colors, acidulants, fillers, antioxidants, and other components that provide desired attributes.

**Detailed Description Text (42):**

High-intensity artificial sweeteners can also be used, alone or in combination, with the above. Preferred sweeteners include, but are not limited to, sucralose, aspartame, salts of acesulfame, altitame, saccharin and its salts, cyclamic acid and its salts, glycerrhizinate, dihydrochalcones, thaumatin, monellin, and the like, alone or in combination. In order to provide longer lasting sweetness and flavor perception, it may be desirable to encapsulate or otherwise control the release of at least a portion

of the artificial sweetener. Such techniques as wet granulation, wax granulation, spray drying, spray chilling, fluid bed coating, coacervation, and fiber extension may be used to achieve the desired release characteristics.

CLAIMS:

1. A chewing gum comprising:

a coating comprising a medicament that surrounds the gum center, the coating comprising at least 50% by weight of the chewing gum product.

2. The chewing gum of claim 1 wherein the medicament is selected from the group consisting of analgesics, muscle relaxants, antibiotics, antivirals, stimulants, antihistamines, decongestants, anti-inflammatories, antacids, psychotherapeutic agents, insulin, vitamins, minerals, and cardiovascular agents.

3. The chewing gum of claim 1 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

4. The chewing gum of claim 3 wherein the taste masking agent is selected from the group consisting of zinc gluconate, ethyl maltol, glycine, acesulfame-k, aspartame, saccharin, fructose, xylitol, isomalt, maltitol, spray dried licorice root, glycrrhizine, sodium gluconate, glucono delta-lactone, ethyl vanillin, dextrose, sucralose, vanillin, and ethyl maltol.

5. The chewing gum of claim 3 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

6. The chewing gum of claim 1 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener selected from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

7. The chewing gum of claim 1 wherein the gum center includes at least 50% by weight water-insoluble gum base.

8. The chewing gum of claim 1 wherein the coating does not have a shellac layer.

9. The chewing gum of claim 1 wherein the gum center and coating are sugar-free.

a coating that at least substantially surrounds the gum center and comprises a medicament and a high-intensity sweetener, the coating comprising at least 50% by weight of the product.

12. The product of claim 10 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

14. The product of claim 10 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

15. The product of claim 10 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener chosen from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

16. The product of claim 10 wherein the coating comprises at least 70% by weight powder when it is applied to the gum center.

18. The chewing gum of claim 10 wherein the coating does not have a shellac layer.

WEST

L16: Entry 1 of 53

File: USPT

Mar 12, 2002

US-PAT-NO: 6355265

DOCUMENT-IDENTIFIER: US 6355265 B1

TITLE: Over-coated chewing gum formulations

DATE-ISSUED: March 12, 2002

## INVENTOR-INFORMATION:

| NAME                    | CITY        | STATE | ZIP CODE | COUNTRY |
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| Wokas; William J.       | Bolingbrook | IL    |          |         |
| Corriveau; Christine L. | Orland Park | IL    |          |         |

## ASSIGNEE-INFORMATION:

| NAME                    | CITY    | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|-------------------------|---------|-------|----------|---------|-----------|
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APPL-NO: 09/ 510878 [PALM]

DATE FILED: February 23, 2000

## PARENT-CASE:

This is a continuation-in-part of U.S. patent application Ser. Nos. 09/286,818, filed on Apr. 6, 1999 and PCT Patent Application No. PCT/US99/29742 filed on Dec. 14, 1999.

INT-CL: [07] A61 K 9/68

US-CL-ISSUED: 424/440; 424/48, 424/464

US-CL-CURRENT: 424/440; 424/464, 424/48

FIELD-OF-SEARCH: 424/400, 424/48, 424/439, 424/440

## PRIOR-ART-DISCLOSED:

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| PAT-NO                                  | ISSUE-DATE    | PATENTEE-NAME     | US-CL |
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| <input type="checkbox"/> <u>3011949</u> | December 1961 | Bilotti           |       |
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| <input type="checkbox"/> | <a href="#"><u>4452821</u></a> | June 1984      | Gergely             |       |
| <input type="checkbox"/> | <a href="#"><u>4474749</u></a> | October 1984   | Kruppa              |       |
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| <input type="checkbox"/> | <a href="#"><u>4822597</u></a> | April 1989     | Faust et al.        |       |
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ART-UNIT: 2615

PRIMARY-EXAMINER: Page; Thurman K.

ASSISTANT-EXAMINER: Howard; S.

**ABSTRACT:**

Methods and products for delivering a medicament or agent to an individual are provided. The product includes a coating having a medicament or agent. The medicament or agent is present within the coating that surrounds a gum center (the water soluble portion and a water insoluble base portion). By chewing the gum, the medicament or agent is released from the product. Continuing to chew the chewing gum creates a pressure within the buccal cavity forcing the agent or medicament directly into the systemic system of the individual through the oral mucosa contained in the buccal cavity. This greatly enhances the absorption of the drug into the systemic system as well as the bioavailability of the drug within the system.

18 Claims, 4 Drawing figures

**WEST** Generate Collection | Print

L16: Entry 2 of 53

File: USPT

US-PAT-NO: 6350480

DOCUMENT-IDENTIFIER: US 6350480 B1

TITLE: Chewing gum product including a hydrophilic gum base and method of producing

DATE-ISSUED: February 26, 2002

## INVENTOR-INFORMATION:

| NAME                  | CITY       | STATE | ZIP CODE | COUNTRY |
|-----------------------|------------|-------|----------|---------|
| Urnezis; Philip W.    | Lombard    | IL    |          |         |
| Mazzone; Philip       | Griffith   | IN    |          |         |
| Greenberg; Michael J. | Northbrook | IL    |          |         |
| Bunczek; Michael T.   | Lisle      | IL    |          |         |
| Barkalow; David G.    | Deerfield  | IL    |          |         |
| Monen; George W.      | Woodridge  | IL    |          |         |

US-CL-CURRENT: 426/5; 424/440, 424/48, 426/3, 426/6

## CLAIMS:

What is claimed is:

1. A hydrophilic chewing gum base comprising:
  - a) about 20% to about 90% hydrophilic polymers;
  - b) about 5% to about 35% hydrophilic softeners/emulsifiers; and
  - c) about 4% to about 50% filler;
  - d) the chewing gum base being essentially free of hydrophobic polymers, elastomer solvents, waxes and hydrophobic softeners.
2. The hydrophilic gum base of claim 1 wherein the hydrophilic polymers are selected from the group consisting of polyvinyl acetate, short and medium chain polyesters, short and medium chain polyamides, and short and medium side chain polyvinyl esters and combinations thereof.
3. The hydrophilic gum base of claim 1 wherein the

hydrophilic polymers are selected from the group consisting of high molecular weight is polyvinyl acetate, low molecular weight polyvinyl acetate, polyvinyl butyrates, polyvinyl propionates and combinations thereof.

4. The hydrophilic gum base of claim 1 wherein the hydrophilic softeners/emulsifiers are selected from the group consisting of glycerol monostearate, glycerol triacetate, lecithin, mono-, and diglycerides, short and medium chain triglycerides, acetylated monoglycerides, and combinations thereof.

5. The hydrophilic gum base of claim 1 wherein the filler is selected from the group consisting of magnesium carbonate, calcium carbonate, ground limestone, magnesium silicate, aluminum silicate, clay, alumina, talc, titanium oxide, mono-, di- and tri-calcium phosphate, cellulose polymers and combinations thereof.

6. The hydrophilic gum base of claim 1 wherein the base is free of butyl elastomers, polyisobutylene and styrene butadiene rubber.

7. The hydrophilic gum base of claim 1 wherein the base is free of terpene resins, rosin esters and ester gums.

8. The hydrophilic gum base of claim 1 wherein the gum base, when admixed into a non-coated chewing gum product, the gum product including lipophilic active agents, releases at least 10% of the lipophilic active agent from the chewing gum product within 30 minutes of chewing.

9. A chewing gum product made using the gum base of any one of claims 1-8.

10. A coated chewing gum product comprising:

a) a chewing gum core made from a hydrophilic gum base, the gum base being essentially free of hydrophobic polymers, elastomer solvents, waxes and hydrophobic softeners; and

b) a coating on the core, the coating including a lipophilic active agent.

11. The coated chewing gum product of claim 10 wherein the lipophilic active agent is selected from the group consisting of vitamins, cancer chemotherapeutics, antimycotics, oral contraceptives, analgesics, antacids, muscle relaxants, antihistamines, decongestants, anesthetics, antitussives, diuretics, anti-inflammatories, antibiotics, antivirals, psychotherapeutic agents, anti-diabetic agents, cardiovascular agents, bioengineered pharmaceuticals, nutraceuticals and nutritional supplements.

12. A method of producing coated chewing gum products containing at least one lipophilic active agent in the coating comprising the steps of:

- a) providing chewing gum product cores wherein the chewing gum is made from a hydrophilic gum base, the gum base being essentially free of hydrophobic polymers, elastomer solvents, waxes and hydrophobic softeners;
- b) providing a coating solution;
- c) coating the chewing gum product cores with the coating solution to provide coated chewing gum products, the coating including a lipophilic active agent at a level of from about 12 micrograms to about 250 milligrams per gram of coated chewing gum product.

13. The method of claim 12 wherein the active agent is mixed in the coating solution prior to coating the cores.

14. The method of claim 13 wherein the active agent is also mixed with a solvent before adding to the coating solution and the resulting mixture is added to the chewing gum coating.

15. The method of claim 14 wherein the solvent is water, alcohol or flavor.

16. The method in claim 12 wherein a high-potency sweetener selected from the group consisting of aspartame, alitame, salts of acesulfame, cyclamate and its salts, saccharine and its salts, neotame, thaumatin, monellin, dihydrochalcones, sucralose and combinations thereof is mixed in the coating solution.

17. The method of claim 12 wherein said lipophilic active agent is selected from the group consisting of vitamins, analgesics, antacids, antihistamines, antitussives, antibacterial agents, decongestants and anesthetics.

18. The method of claim 12 wherein the active agent is a nutraceutical.

19. The method of claim 12 wherein said active agent is vitamin E.

20. The method of claim 12 wherein the coating operation includes the application of multiple coats of coating solution and application of powder material between coats of coating solution.

21. The method of claim 20 wherein the active agent is included in the powder material.

22. The method of claim 20 wherein active agent is included in both the coating solution and the powder material.

23. The method of claim 12 wherein a lipophilic active agent is also included in the chewing gum cores.

24. The method of claim 23 wherein the active agents in the gum cores and coating are the same.

25. The method of claim 23 wherein the active agent in the cores is different than the active agent in the coating.

26. The method of claim 12 wherein at least two different coating solutions are used to make the coating.

27. The method of claim 26 wherein the active agent is mixed with the first of the at least two different coating solutions and applied to form a film, and a second coating solution without an active agent is applied over the film coated cores.

28. The method of claim 12 wherein the active agent is present in the coating at a level of from about 10 ppm to about 30% of the coating.

29. A method of delivering a lipophilic active agent comprising the steps of:

- a) providing a chewing gum product having i) a chewing gum core made using a hydrophilic gum base, the gum base being essentially free of hydrophobic polymers, elastomer solvents, waxes and hydrophobic softeners, and ii) a coating including a lipophilic active agent in the coating; and
- b) chewing the chewing gum product for at least 10 minutes in an oral cavity of an individual chewing the chewing gum product.

30. The method of claim 29 wherein the active agent is chosen from the group consisting of: vitamins; analgesics; muscle relaxants; antibiotics; antivirals; antihistamines; decongestants; anti-inflammatories; antacids; psychotherapeutic agents; and cardiovascular agents.

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L16: Entry 2 of 53

File: USPT

DOCUMENT-IDENTIFIER: US 6350480 B1

TITLE: Chewing gum product including a hydrophilic gum base and method of producing

**Abstract Text (1):**

A method for producing a chewing gum with an improved release of a lipophilic active agent, as well as the chewing gum so produced, is obtained by using a hydrophilic gum base. The preferred and novel gum base includes hydrophilic polymers, hydrophilic softeners/emulsifiers and fillers, but is essentially free of hydrophobic elastomers and hydrophobic softeners, as well as waxes and elastomer solvents. The lipophilic active agent is preferably added to a coating on a chewing gum pellet made using a hydrophilic gum base, such as by being mixed into a coating solution. The coating solution may contain a high-intensity sweetener. An active agent may also be used in the gum core.

**Brief Summary Text (33):**

Lipophilic active agents may be added to the gum coating along with sweeteners, more specifically high-intensity sweeteners such as thaumatin, dihydrochalcones, acesulfame K, aspartame, N-substituted APM derivatives such as neotame, sucralose, alitame, saccharin and cyclamates. These can also have the effect of reducing unpleasant tastes such as bitterness. Additional bitterness inhibitors or taste maskers can also be combined with active agents and sweeteners to give a reduced unpleasant taste.

**Brief Summary Text (35):**

In many instances, active medicaments may have a low quality off-taste or bitterness if added to a chewing gum coating. In most cases, this off taste may be masked with high intensity sweeteners, but in other instances, a bitterness inhibitor may be needed to reduce a bitter taste of a medicament.

**Brief Summary Text (45):**

In addition to a water insoluble gum base portion, a typical chewing gum composition includes a water soluble bulk portion and one or more flavoring agents. The water soluble portion can include bulk sweeteners, high intensity sweeteners, flavoring agents, softeners, emulsifiers, colors, acidulants, fillers, antioxidants, and other components that provide desired attributes.

**Brief Summary Text (48):**

High intensity artificial sweeteners can also be used, alone or in combination, with the above. Preferred sweeteners include, but are not limited to, sucralose, aspartame, N-substituted APM derivatives such as neotame, salts of acesulfame, alitame, saccharin and its salts, cyclamic acid and its salts, glycyrrhizinate, dihydrochalcones, thaumatin, monellin, and the like, alone or in combination. In order to provide longer lasting sweetness and flavor perception, it may be desirable to encapsulate or otherwise control the release of at least a portion of the artificial sweetener. Such techniques as wet granulation, wax granulation, spray drying, spray chilling, fluid bed coating, coacervation, and fiber extrusion may be used to achieve the desired release characteristics.

**CLAIMS:**

1. A hydrophilic chewing gum base comprising:

d) the chewing gum base being essentially free of hydrophobic polymers, elastomer solvents, waxes and hydrophobic softeners.

8. The hydrophilic gum base of claim 1 wherein the gum base, when admixed into a non-coated chewing gum product, the gum product including lipophilic active agents, releases at least 10% of the lipophilic active agent from the chewing gum product within 30 minutes of chewing.

9. A chewing gum product made using the gum base of any one of claims 1-8.

10. A coated chewing gum product comprising:

a) a chewing gum core made from a hydrophilic gum base, the gum base being essentially free of hydrophobic polymers, elastomer solvents, waxes and hydrophobic softeners; and

b) a coating on the core, the coating including a lipophilic active agent.

11. The coated chewing gum product of claim 10 wherein the lipophilic active agent is selected from the group consisting of vitamins, cancer chemotherapeutics, antimycotics, oral contraceptives, analgesics, antacids, muscle relaxants, antihistamines, decongestants, anesthetics, antitussives, diuretics, anti-inflammatories, antibiotics, antivirals, psychotherapeutic agents, anti-diabetic agents, cardiovascular agents, bioengineered pharmaceuticals, nutraceuticals and nutritional supplements.

12. A method of producing coated chewing gum products containing at least one lipophilic active agent in the coating comprising the steps of:

a) providing chewing gum product cores wherein the chewing gum is made from a hydrophilic gum base, the gum base being essentially free of hydrophobic polymers, elastomer solvents, waxes and hydrophobic softeners;

b) providing a coating solution;

c) coating the chewing gum product cores with the coating solution to provide coated chewing gum products, the coating including a lipophilic active agent at a level of from about 12 micrograms to about 250 milligrams per gram of coated chewing gum product.

13. The method of claim 12 wherein the active agent is mixed in the coating solution prior to coating the cores.

14. The method of claim 13 wherein the active agent is also mixed with a solvent before adding to the coating solution and the resulting mixture is added to the chewing gum coating.

16. The method in claim 12 wherein a high-potency sweetener selected from the group consisting of aspartame, alitame, salts of acesulfame, cyclamate and its salts, saccharine and its salts, neotame, thaumatin, monellin, dihydrochalcones, sucralose and combinations thereof is mixed in the coating solution.

20. The method of claim 12 wherein the coating operation includes the application of multiple coats of coating solution and application of powder material between coats of coating solution.

22. The method of claim 20 wherein active agent is included in both the coating solution and the powder material.

23. The method of claim 12 wherein a lipophilic active agent is also included in the chewing gum cores.

24. The method of claim 23 wherein the active agents in the gum cores and coating are the same.

25. The method of claim 23 wherein the active agent in the cores is different than the active agent in the coating.

26. The method of claim 12 wherein at least two different coating solutions are used to make the coating.

27. The method of claim 26 wherein the active agent is mixed with the first of the at least two different coating solutions and applied to form a film, and a second coating solution without an active agent is applied over the film coated cores.

28. The method of claim 12 wherein the active agent is present in the coating at a level of from about 10 ppm to about 30% of the coating.

a) providing a chewing gum product having i) a chewing gum core made using a hydrophilic gum base, the gum base being essentially free of hydrophobic polymers, elastomer solvents, waxes and hydrophobic softeners, and ii) a coating including a lipophilic active agent in the coating; and

b) chewing the chewing gum product for at least 10 minutes in an oral cavity of an individual chewing the chewing gum product.

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L16: Entry 2 of 53

File: USPT

Feb 26, 2002

US-PAT-NO: 6350480

DOCUMENT-IDENTIFIER: US 6350480 B1

TITLE: Chewing gum product including a hydrophilic gum base and method of producing

DATE-ISSUED: February 26, 2002

## INVENTOR-INFORMATION:

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## ASSIGNEE-INFORMATION:

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APPL-NO: 09/ 749983 [PALM]

DATE FILED: December 27, 2000

## PARENT-CASE:

REFERENCE TO EARLIER FILED APPLICATION The present application claims the benefit of the filing date under 35 U.S.C. sctn.119(e) of provisional U.S. Patent Application, Ser. No. 60/173,736, filed Dec. 30, 1999, which is hereby incorporated by reference.

INT-CL: [07] A23 G 3/30, A61 K 9/68

US-CL-ISSUED: 426/5; 424/48, 424/440, 426/3, 426/6

US-CL-CURRENT: 426/5; 424/440, 424/48, 426/3, 426/6

FIELD-OF-SEARCH: 426/3, 426/5, 426/6, 424/48, 424/440

## PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

| PAT-NO                                                  | ISSUE-DATE    | PATENTEE-NAME     | US-CL   |
|---------------------------------------------------------|---------------|-------------------|---------|
| <input type="checkbox"/> <a href="#"><u>2990328</u></a> | June 1961     | Lincoln           |         |
| <input type="checkbox"/> <a href="#"><u>4238510</u></a> | December 1980 | Cherukuri et al.  | 426/5   |
| <input type="checkbox"/> <a href="#"><u>4317838</u></a> | March 1982    | Cherukuri et al.  | 426/5   |
| <input type="checkbox"/> <a href="#"><u>4374858</u></a> | February 1983 | Glass et al.      | 426/5   |
| <input type="checkbox"/> <a href="#"><u>4378374</u></a> | March 1983    | Reggio et al.     | 426/3   |
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| <input type="checkbox"/> <a href="#"><u>5858383</u></a> | January 1999  | Precopio          | 424/405 |
| <input type="checkbox"/> <a href="#"><u>5858412</u></a> | January 1999  | Staniforth et al. | 424/489 |
| <input type="checkbox"/> <a href="#"><u>5858413</u></a> | January 1999  | Jettka et al.     | 424/682 |
| <input type="checkbox"/> <a href="#"><u>5858423</u></a> | January 1999  | Yajima et al.     | 426/3   |
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| FOREIGN-PAT-NO | PUBN-DATE | COUNTRY | US-CL |
|----------------|-----------|---------|-------|
| 98/23165       | June 1998 | WO      | 426/5 |

ART-UNIT: 1761

PRIMARY-EXAMINER: Corbin; Arthur L.

## ABSTRACT:

A method for producing a chewing gum with an improved release of a lipophilic active agent, as well as the chewing gum so produced, is obtained by using a hydrophilic gum base. The preferred and novel gum base includes hydrophilic polymers, hydrophilic softeners/emulsifiers and fillers, but is essentially free of hydrophobic elastomers and hydrophobic softeners, as well as waxes and elastomer solvents. The lipophilic active agent is preferably added to a coating on a chewing gum pellet made using a hydrophilic gum base, such as by being mixed into a coating solution. The coating solution may contain a high-intensity sweetener. An active agent may also be used in the gum core.

30 Claims, 0 Drawing figures

**WEST**  

L16: Entry 3 of 53

File: USPT

US-PAT-NO: 6322806

DOCUMENT-IDENTIFIER: US 6322806 B1

TITLE: Over-coated chewing gum formulations including tableted center

DATE-ISSUED: November 27, 2001

## INVENTOR-INFORMATION:

| NAME                    | CITY        | STATE | ZIP CODE | COUNTRY |
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US-CL-CURRENT: 424/440; 424/464, 424/48

## CLAIMS:

We claim:

1. A chewing gum comprising:

a tableted gum center comprising a water soluble portion and a water insoluble portion; and

a coating comprising a medicament that surrounds the tableted gum center, the coating comprising at least 50% by weight of the chewing gum product.

2. The chewing gum of 1 wherein the medicament is selected from the group consisting of analgesics, muscle relaxants, antibiotics, antivirals, stimulants, antihistamines, decongestants, anti-inflammatories, antacids, psychotherapeutic agents, insulin, vitamins, minerals, and cardiovascular agents.

3. The chewing gum of claim 1 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

4. The chewing gum of claim 3 wherein the taste masking agent is selected from the group consisting of zinc

gluconate, ethyl maltol, glycine, acesulfame-k, aspartame, saccharin, fructose, xylitol, isomalt, maltitol, spray dried licorice root, glycrrhizine, sodium gluconate, glucono delta-lactone, ethyl vanillin, dextrose, sucralose, vanillin, and ethyl maltol.

5. The chewing gum of claim 3 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

6. The chewing gum of claim 1 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener selected from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

7. The chewing gum of claim 1 wherein the tableted gum center includes at least 50% by weight water-insoluble gum base.

8. The chewing gum of claim 1 wherein the coating does not have a shellac layer.

9. The chewing gum of claim 1 wherein the tableted gum center and coating are sugar-free.

10. A product including a medicament comprising:

a tableted gum center comprising a water soluble portion and a water insoluble portion, the water insoluble portion comprising at least 30% by weight of the tableted gum center; and

a coating that at least substantially surrounds the tableted gum center and comprises a medicament and a high-intensity sweetener, the coating comprising at least 50% by weight of the product.

11. The product of claim 10 wherein the medicament is selected from the group consisting of analgesics, muscle relaxants, antibiotics, antivirals, stimulants, antihistamines, decongestants, anti-inflammatories, antacids, psychotherapeutic agents, insulin, vitamins, minerals, and cardiovascular agents.

12. The product of claim 10 wherein the coating includes

a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

13. The product of claim 10 wherein the taste masking agent is selected from the group consisting of zinc gluconate, ethyl maltol, glycine, acesulfame-k, aspartame, saccharin, fructose, xylitol, isomalt, maltitol, spray dried licorice root, glycrrhizine, sodium gluconate, glucono delta-lactone, ethyl vanillin, dextrose, sucralose, vanillin, and ethyl maltol.

14. The product of claim 10 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

15. The product of claim 10 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener chosen from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

16. The product of claim 10 wherein the coating comprises at least 70% by weight powder when it is applied to the tableted gum center.

17. The product of claim 10 wherein the product is sugar-free.

18. The chewing gum of claim 10 wherein the coating does not have a shellac layer.

19. A chewing gum product including a medicament comprising:

a uniform gum center comprising a water-soluble and a water-insoluble portion; and

a coating that substantially surrounds the uniform gum center and comprises a medicament, the coating comprising at least 50% by weight of the chewing gum product.

20. The chewing gum product of claim 19 wherein the medicament is selected from the group consisting of analgesics, muscle relaxants, antibiotics, antivirals, stimulants, antihistamines, decongestants, anti-inflammatories, antacids, psychotherapeutic agents, insulin, vitamins, minerals, and cardiovascular agents.

21. The chewing gum product of claim 19 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

22. The chewing gum product of claim 19 wherein the taste masking agent is selected from the group consisting of zinc gluconate, ethyl maltol, glycine, acesulfame-k, aspartame, saccharin, fructose, xylitol, isomalt, maltitol, spray dried licorice root, glycrrhizine, sodium gluconate, glucono delta-lactone, ethyl vanillin, dextrose, sucralose, vanillin, and ethyl maltol.

23. The chewing gum product of claim 19 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

24. The chewing gum product of claim 19 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener selected from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

25. The chewing gum product of claim 19 wherein the tableted gum center includes at least 50% by weight water-insoluble gum base.

26. The chewing gum product of claim 19 wherein the coating does not have a shellac layer.

27. The chewing gum product of claim 19 wherein the tableted gum center and coating are sugar-free.

28. A product including a medicament comprising:

a gum center having a controlled size and shape and comprising a water-soluble and a water-insoluble portion; and

a coating that substantially surrounds the gum center and comprises a medicament, the coating comprising at least 50% by weight of the product.

29. The product of claim 28 wherein the medicament is selected from the group consisting of analgesics, muscle relaxants, antibiotics, antivirals, stimulants,

antihistamines, decongestants, anti-inflammatories, antacids, psychotherapeutic agents, insulin, vitamins, minerals, and cardiovascular agents.

30. The product of claim 28 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

31. The product of claim 28 wherein the taste masking agent is selected from the group consisting of zinc gluconate, ethyl maltol, glycine, acesulfame-k, aspartame, saccharin, fructose, xylitol, isomalt, maltitol, spray dried licorice root, glycrrhizine, sodium gluconate, glucono delta-lactone, ethyl vanillin, dextrose, sucralose, vanillin, and ethyl maltol.

32. The product of claim 28 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

33. The product of claim 28 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener selected from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

34. The product of claim 28 wherein the tableted gum center includes at least 50% by weight water-insoluble gum base.

35. The product of claim 28 wherein the coating does not have a shellac layer.

36. The product of claim 28 wherein the tableted gum center and coating are sugar-free.

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L16: Entry 3 of 53

File: USPT

DOCUMENT-IDENTIFIER: US 6322806 B1

TITLE: Over-coated chewing gum formulations including tableted center

**Brief Summary Text (23):**

In an embodiment, the coating includes a high-intensity sweetener. In a further embodiment, the high-intensity sweetener is chosen from the group consisting of aspartame, sucralose, and acesulfame-K.

**Detailed Description Text (10):**

Preferably, the coating 14 will include masking agents. In this regard, high-intensity sweeteners and appropriate flavors can be used to mask any off notes that are present due to the medicament or agent. It has been found that with respect to certain medicaments or agents that may have an astringent or bitter taste that by adding a masking agent to the formulation, that a much more palatable formulation, including the medicament, can be provided. In this regard, even though the medicament in for example, its powder form may be bitter or have an offensive taste, the matrix used as the coating of the present invention, including the masking agent, will afford a product having acceptable organoleptic properties. For example, it has been surprisingly found that by solubilizing a powdered matrix of medicament and masking agent, this increases the ability of the masking agent to cover up bitter and bad flavors produced by the medicament or agent. By selecting specific masking agents based on the bad or off taste produced by the medicament, one can provide a palatable formulation.

**Detailed Description Text (11):**

For example, if one is attempting to cover an astringent flavor such as aspirin, one could use masking agents found to be effective against astringency such as fructose and high-intensity sweeteners, e.g. saccharin, aspartame, sucralose, and acesulfame-k. In the case of a moderately bitter active ingredient, such as caffeine, one would use ingredients such as glycine, ethyl maltol, zinc gluconate, licorice root powder, high-intensity sweeteners, etc. In the case of a very bad tasting active ingredient such as acetaminophen it has been found that peppermint functions very well, but, may need to be augmented with a high-intensity sweetener, such as, for example, aspartame.

**Detailed Description Text (14):**

In a preferred embodiment, the coating includes a high-intensity sweetener such as aspartame, sucralose, and acesulfame-k. Preferably, the high-intensity sweetener comprises approximately 0.5% to about 5% by weight of the coating.

**Detailed Description Text (30):**

In an embodiment of the coating, dextrose or sucrose or combinations thereof function as the main ingredient. In a preferred embodiment, dextrose is utilized and the dextrose comprises approximately 50 to about 90% of the coating. The active ingredients or medicaments, in the coating may comprise as much as 30% of the coating down to very small amounts as long as the medication is efficacious. In a preferred embodiment, the flavors are powdered flavors and can range from 0.1% to approximately 5%. High-intensity sweeteners such as aspartame, sucralose, and acesulfame-k can also be used in the coating and range from approximately 0.5 to about 5% of the coating. As noted above, these high-intensity sweeteners are excellent masking agents.

**Detailed Description Text (43):**

In addition to a water insoluble gum base portion, a typical chewing gum composition includes a water soluble bulk portion and one or more flavoring agents. The water soluble portion can include bulk sweeteners, high-intensity sweeteners, flavoring agents, softeners, emulsifiers, colors, acidulants, fillers, antioxidants, and other components that provide desired attributes.

**Detailed Description Text (46):**

High-intensity artificial sweeteners can also be used, alone or in combination, with the above. Preferred sweeteners include, but are not limited to, sucralose, aspartame, salts of acesulfame, altitame, saccharin and its salts, cyclamic acid and its salts, glycerhizinate, dihydrochalcones, thaumatin, monellin, and the like, alone or in combination. In order to provide longer lasting sweetness and flavor perception, it may be desirable to encapsulate or otherwise control the release of at least a portion

of the artificial sweetener. Such techniques as wet granulation, wax granulation, spray drying, spray chilling, fluid bed coating, coacervation, and fiber extension may be used to achieve the desired release characteristics.

CLAIMS:

1. A chewing gum comprising:

a coating comprising a medicament that surrounds the tableted gum center, the coating comprising at least 50% by weight of the chewing gum product.

2. The chewing gum of 1 wherein the medicament is selected from the group consisting of analgesics, muscle relaxants, antibiotics, antivirals, stimulants, antihistamines, decongestants, anti-inflammatories, antacids, psychotherapeutic agents, insulin, vitamins, minerals, and cardiovascular agents.

3. The chewing gum of claim 1 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

4. The chewing gum of claim 3 wherein the taste masking agent is selected from the group consisting of zinc gluconate, ethyl maltol, glycine, acesulfame-k, aspartame, saccharin, fructose, xylitol, isomalt, maltitol, spray dried licorice root, glycrrhizine, sodium gluconate, glucono delta-lactone, ethyl vanillin, dextrose, sucralose, vanillin, and ethyl maltol.

5. The chewing gum of claim 3 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

6. The chewing gum of claim 1 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener selected from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

7. The chewing gum of claim 1 wherein the tableted gum center includes at least 50% by weight water-insoluble gum base.

8. The chewing gum of claim 1 wherein the coating does not have a shellac layer.

9. The chewing gum of claim 1 wherein the tableted gum center and coating are sugar-free.

a coating that at least substantially surrounds the tableted gum center and comprises a medicament and a high-intensity sweetener, the coating comprising at least 50% by weight of the product.

12. The product of claim 10 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

14. The product of claim 10 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

15. The product of claim 10 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener chosen from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

16. The product of claim 10 wherein the coating comprises at least 70% by weight powder when it is applied to the tableted gum center.

18. The chewing gum of claim 10 wherein the coating does not have a shellac layer.

19. A chewing gum product including a medicament comprising:

a coating that substantially surrounds the uniform gum center and comprises a medicament, the coating comprising at least 50% by weight of the chewing gum product.

20. The chewing gum product of claim 19 wherein the medicament is selected from the group consisting of analgesics, muscle relaxants, antibiotics, antivirals, stimulants, antihistamines, decongestants, anti-inflammatories, antacids, psychotherapeutic agents, insulin, vitamins, minerals, and cardiovascular agents.

21. The chewing gum product of claim 19 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

22. The chewing gum product of claim 19 wherein the taste masking agent is selected from the group consisting of zinc gluconate, ethyl maltol, glycine, acesulfame-k, aspartame, saccharin, fructose, xylitol, isomalt, maltitol, spray dried licorice root, glycerhizine, sodium gluconate, glucono delta-lactone, ethyl vanillin, dextrose, sucralose, vanillin, and ethyl maltol.

23. The chewing gum product of claim 19 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

24. The chewing gum product of claim 19 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener selected from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

25. The chewing gum product of claim 19 wherein the tableted gum center includes at least 50% by weight water-insoluble gum base.

26. The chewing gum product of claim 19 wherein the coating does not have a shellac layer.

27. The chewing gum product of claim 19 wherein the tableted gum center and coating are sugar-free.

a coating that substantially surrounds the gum center and comprises a medicament, the coating comprising at least 50% by weight of the product.

30. The product of claim 28 wherein the coating includes a sufficient amount of taste masking agent to provide acceptable organoleptic properties.

32. The product of claim 28 wherein the taste masking agent comprises approximately 30% to about 99% by weight of the coating.

33. The product of claim 28 wherein the coating includes approximately 0.5% to about 5% by weight of a high-intensity sweetener selected from the group consisting of aspartame, sucralose, saccharine, and acesulfame-k.

35. The product of claim 28 wherein the coating does not have a shellac layer.

36. The product of claim 28 wherein the tableted gum center and coating are sugar-free.

WEST

L16: Entry 3 of 53

File: USPT

Nov 27, 2001

US-PAT-NO: 6322806

DOCUMENT-IDENTIFIER: US 6322806 B1

TITLE: Over-coated chewing gum formulations including tableted center

DATE-ISSUED: November 27, 2001

## INVENTOR-INFORMATION:

| NAME                    | CITY        | STATE | ZIP CODE | COUNTRY |
|-------------------------|-------------|-------|----------|---------|
| Ream; Ronald L.         | Plano       | IL    |          |         |
| Corriveau; Christine L. | Orland Park | IL    |          |         |
| Graff; Gwendolyn        | DeKalb      | IL    |          |         |
| Matulewicz; Leonard     | Oswego      | IL    |          |         |

## ASSIGNEE-INFORMATION:

| NAME                    | CITY    | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|-------------------------|---------|-------|----------|---------|-----------|
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APPL-NO: 09/ 618808 [PALM]

DATE FILED: July 18, 2000

## PARENT-CASE:

This is a continuation-in-part of U.S. patent application Ser. No. 09/510,878, filed on Feb. 23, 2000, which is a continuation-in-part of U.S. patent application Ser. Nos. 09/286,818, filed on Apr. 6, 1999 and PCT Patent Application No. PCT/US99/29742 filed on Dec. 14, 1999.

INT-CL: [07] A61 K 9/68, A61 K 9/20

US-CL-ISSUED: 424/440; 424/48, 424/464

US-CL-CURRENT: 424/440; 424/464, 424/48

FIELD-OF-SEARCH: 424/400, 424/48, 424/439, 424/440, 424/464, 426/5

## PRIOR-ART-DISCLOSED:

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| <input type="checkbox"/> <u>2892753</u> | June 1959     | Schmidt et al. | 167/65 |
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| <input type="checkbox"/> <u>3011949</u> | December 1961 | Bilotti        | 167/82 |

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| <input type="checkbox"/> | <a href="#"><u>3308022</u></a> | March 1967     | Cummings et al.     | 167/65  |
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| <input type="checkbox"/> | <a href="#"><u>4452821</u></a> | June 1984      | Gergely             | 426/5   |
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| <input type="checkbox"/> | <a href="#"><u>4639368</u></a> | January 1987   | Niazi et al.        | 424/48  |
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| <input type="checkbox"/> | <a href="#"><u>4882152</u></a> | November 1989  | Yang et al.      |           |
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| <input type="checkbox"/> | <a href="#"><u>4944949</u></a> | July 1990      | Story et al.     | 424/451   |
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| <input type="checkbox"/> | <a href="#"><u>4968716</u></a> | November 1990  | Markham          | 514/474   |
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| <input type="checkbox"/> | <a href="#"><u>4978537</u></a> | December 1990  | Song             | 426/5     |
| <input type="checkbox"/> | <a href="#"><u>4997659</u></a> | March 1991     | Yatka et al.     | 426/3     |
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| <input type="checkbox"/> | <a href="#"><u>5397580</u></a> | March 1995     | Song et al.      |           |
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| <input type="checkbox"/> | <a href="#"><u>5419919</u></a> | May 1995       | Song et al.      |           |
| <input type="checkbox"/> | <a href="#"><u>5433960</u></a> | July 1995      | Meyers           | 426/5     |
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| <input type="checkbox"/> | <a href="#"><u>5512306</u></a> | April 1996     | Carlsson et al.   | 426/3   |
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| <input type="checkbox"/> | <a href="#"><u>5889029</u></a> | March 1999     | Rolf               | 514/343 |
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ART-UNIT: 165

PRIMARY-EXAMINER: Page; Thurman K.

ASSISTANT-EXAMINER: Howard; S.

**ABSTRACT:**

Methods and products for delivering a medicament or agent to an individual are provided as well as methods for producing the product. The product includes a coating having a medicament or agent. The medicament or agent is present within the coating that surrounds a tableted gum center (the water soluble portion and a water insoluble base portion). By chewing the gum, the medicament or agent is released from the product. Continuing to chew the chewing gum creates a pressure within the buccal cavity forcing the agent or medicament directly into the systemic system of the individual through the oral mucosa contained in the buccal cavity. This greatly enhances the absorption of the drug into the systemic system as well as the bioavailability of the drug within the system.

36 Claims, 4 Drawing figures

**WEST**
  

L16: Entry 5 of 53

File: USPT

Sep 18, 2001

US-PAT-NO: 6290985

DOCUMENT-IDENTIFIER: US 6290985 B1

TITLE: Over-coated chewing gum formulations including tableted center

DATE-ISSUED: September 18, 2001

**INVENTOR-INFORMATION:**

| NAME                    | CITY        | STATE | ZIP CODE | COUNTRY |
|-------------------------|-------------|-------|----------|---------|
| Ream; Ronald L.         | Plano       | IL    |          |         |
| Corriveau; Christine L. | Orland Park | IL    |          |         |
| Graff; Gwendolyn        | DeKalb      | IL    |          |         |
| Matulewicz; Leonard     | Oswego      | IL    |          |         |

**ASSIGNEE-INFORMATION:**

| NAME                     | CITY    | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|--------------------------|---------|-------|----------|---------|-----------|
| Wm. Wrigley, Jr. Company | Chicago | IL    |          |         | 02        |

APPL-NO: 09/ 759838 [PALM]

DATE FILED: January 11, 2001

**PARENT-CASE:**

This is a divisional of U.S. patent application Ser. No. 09/618,808, filed on Jul. 18, 2000, which is a continuation-in-part of U.S. patent application Ser. No. 09/510,878, filed on Feb. 23, 2000, which is a continuation-in-part of U.S. patent application Ser. No. 09/286,818, filed on Apr. 6, 1999 and PCT Patent Application No. PCT/US99/29742 filed on Dec. 14, 1999.

INT-CL: [07] A61 K 9/28, A61 K 9/68, A61 K 47/00

US-CL-ISSUED: 424/440, 424/439, 424/441, 424/464, 424/474

US-CL-CURRENT: 424/440; 424/439, 424/441, 424/464, 424/474

FIELD-OF-SEARCH: 424/439, 424/440, 424/441, 424/464, 424/474

**PRIOR-ART-DISCLOSED:****U.S. PATENT DOCUMENTS**
 

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ART-UNIT: 165

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**ABSTRACT:**

Methods and products for delivering a medicament or agent to an individual are provided as well as methods for producing the product. The product includes a coating having a medicament or agent. The medicament or agent is present within the coating that surrounds a tableted gum center (the water soluble portion and a water insoluble base portion). By chewing the gum, the medicament or agent is released from the product. Continuing to chew the chewing gum creates a pressure within the buccal cavity forcing the agent or medicament directly into the systemic system of the individual through the oral mucosa contained in the buccal cavity. This greatly enhances the absorption of the drug into the systemic system as well as the bioavailability of the drug within the system.

29 Claims, 4 Drawing figures

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L16: Entry 5 of 53

File: USPT

US-PAT-NO: 6290985

DOCUMENT-IDENTIFIER: US 6290985 B1

TITLE: Over-coated chewing gum formulations including tableted center

DATE-ISSUED: September 18, 2001

## INVENTOR-INFORMATION:

| NAME                    | CITY        | STATE | ZIP CODE | COUNTRY |
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US-CL-CURRENT: 424/440; 424/439, 424/441, 424/464, 424/474

## CLAIMS:

We claim:

1. A method for delivering a medicament to an individual comprising the steps of:

providing a chewing gum that includes a tableted gum center and a coating that substantially surrounds the tableted gum center, the coating comprising at least 50% by weight of the chewing gum, the coating comprises a medicament;

chewing the chewing gum to cause the medicament to be released from the chewing gum composition into the buccal cavity of the individual; and

continuing to chew the chewing gum thereby creating a fluid pressure causing the medicament to enter the systemic system of the individual through an oral mucosa of the individual.

2. The method of claim 1 wherein the coating includes a high-intensity sweetener.

3. The method of claim 1 wherein the high-intensity

sweetener is chosen from the group consisting of aspartame, sucralose, saccharin, and acesulfame-k.

4. The method of claim 1 wherein the coating is produced by alternating layers of a powder and a syrup onto the tableted gum center.

5. The method of claim 1 wherein the tableted gum center includes at least 50% by weight water-insoluble gum base.

6. The method of claim 1 wherein the medicament is chosen from the group consisting of: analgesics; muscle relaxants; antibiotics; antivirals; antihistamines; decongestants; anti-inflammatories; antacids; psychotherapeutic agents; insulin; vitamins; minerals; and cardiovascular agents.

7. The method of claim 1 wherein the coating has a matte finish.

8. The method of claim 1 wherein the coating does not include a shellac layer.

9. A method of delivering a medicament comprising the steps of:

providing a chewing gum having a tableted gum center and a coating that substantially surrounds the center, the coating comprising at least 50% by weight of the chewing gum, the coating comprises a medicament and not a shellac layer; and

chewing the chewing gum for at least 2 minutes in a buccal cavity of an individual chewing the chewing gum.

10. The method of claim 9 wherein the medicament is chosen from the group consisting of: analgesics; muscle relaxants; antibiotics; antivirals; antihistamines; decongestants; anti-inflammatories; antacids; psychotherapeutic agents; and cardiovascular agents.

11. The method of claim 9 wherein the tableted gum center comprises approximately 30% to about 90% by weight insoluble gum base.

12. A method for delivering a medicament to an individual

comprising the steps of:

providing a chewing gum product that includes a tableted gum center that is substantially coated by a formulation that includes a medicament and a sufficient amount of a masking agent to provide acceptable organoleptic properties, the formulation comprising at least 50% by weight of the chewing gum product; and

chewing the chewing gum product to cause the medicament to be released from the formulation into a buccal cavity of the individual.

13. The method of claim 12 wherein the formulation includes a high-intensity sweetener.

14. The method of claim 12 wherein the medicament is chosen from the group consisting of: analgesics; muscle relaxants; antibiotics; antivirals; stimulants; antihistamines; decongestants; anti-inflammatory; antacids; psychotherapeutic agents; insulin; vitamins; minerals; and cardiovascular agents.

15. The method of claim 12 wherein the taste masking agent is chosen from the group consisting of: zinc gluconate, ethyl maltol, glycine, acesulfame-k, aspartame; saccharin; fructose; xylitol; isomalt; maltitol; spray dried licorice root; glycrrhizine; sodium gluconate; glucono delta-lactone; vanillin; dextrose; sucralose; and ethyl maltol.

16. The method of claim 12 wherein the masking agent comprises approximately 30% to about 99% by weight of the coating.

17. A method of manufacturing a product containing an agent comprising the steps of:

preparing a gum center having a water soluble portion and a water insoluble portion by tabletting the water-soluble portion and water-insoluble portion to produce a tableted gum center; and

coating the center by placing alternating layers of a powder and a syrup on the center to create a coated product, at least one of the powder or syrup layers

comprising at least one agent.

18. The method of claim 17 wherein the coated product comprises at least 50% by weight syrup and powder coating.

19. The method of claim 17 wherein the tableted gum center includes at least 50% by weight water-insoluble gum base.

20. The method of claim 17 wherein the coating includes a high-intensity sweetener.

21. The method of claim 17 wherein the agent is a medicament.

22. The method of claim 20 wherein the medicament is chosen from the group consisting of: analgesics; muscle relaxants; antibiotics; antivirals; antihistamines; decongestants; anti-inflammatories; antacids; psychotherapeutic agents; insulin; vitamins; minerals; and cardiovascular agents.

23. The method of claim 17 wherein at least two alternating layers are coated on to the center.

24. The method of claim 17 wherein the powder comprises at least 70% by weight of the coating.

25. The method of claim 17 wherein the coating does not include a shellac layer.

26. A method of providing chewing gum that includes a medicament comprising the steps of:

preparing a gum center having a water-soluble portion and a water-insoluble portion by tabletting the water-soluble and water-insoluble portions into a predefined shape; and

coating the predefined shape with at least one layer comprising a medicament.

27. The method of claim 26 wherein the coated product comprises at least 50% by weight syrup and powder coating.

28. The method of claim 26 wherein the medicament is chosen from the group consisting of: analgesics; muscle relaxants; antibiotics; antivirals; antihistamines; decongestants; anti-inflammatories; antacids; psychotherapeutic agents; insulin; vitamins; minerals; and cardiovascular agents.

29. The method of claim 26 wherein the coating includes a high-intensity sweetener.

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L16: Entry 5 of 53

File: USPT

DOCUMENT-IDENTIFIER: US 6290985 B1

TITLE: Over-coated chewing gum formulations including tableted center

**Brief Summary Text (22):**

In an embodiment, the coating includes a high-intensity sweetener. In a further embodiment, the high-intensity sweetener is chosen from the group consisting of aspartame, sucralose, and acesulfame-K.

**Detailed Description Text (10):**

Preferably, the coating 14 will include masking agents. In this regard, high-intensity sweeteners and appropriate flavors can be used to mask any off notes that are present due to the medicament or agent. It has been found that with respect to certain medicaments or agents that may have an astringent or bitter taste that by adding a masking agent to the formulation, that a much more palatable formulation, including the medicament, can be provided. In this regard, even though the medicament in for example, its powder form may be bitter or have an offensive taste, the matrix used as the coating of the present invention, including the masking agent, will afford a product having acceptable organoleptic properties. For example, it has been surprisingly found that by solubilizing a powdered matrix of medicament and masking agent, this increases the ability of the masking agent to cover up bitter and bad flavors produced by the medicament or agent. By selecting specific masking agents based on the bad or off taste produced by the medicament, one can provide a palatable formulation.

**Detailed Description Text (11):**

For example, if one is attempting to cover an astringent flavor such as aspirin, one could use masking agents found to be effective against astringency such as fructose and high-intensity sweeteners, e.g. saccharin, aspartame, sucralose, and acesulfame-k. In the case of a moderately bitter active ingredient, such as caffeine, one would use ingredients such as glycine, ethyl maltol, zinc gluconate, licorice root powder, high-intensity sweeteners, etc. In the case of a very bad tasting active ingredient such as acetaminophen it has been found that peppermint functions very well, but, may need to be augmented with a high-intensity sweetener, such as, for example, aspartame.

**Detailed Description Text (14):**

In a preferred embodiment, the coating includes a high-intensity sweetener such as aspartame, sucralose, and acesulfame-k. Preferably, the high-intensity sweetener comprises approximately 0.5% to about 5% by weight of the coating.

**Detailed Description Text (30):**

In an embodiment of the coating, dextrose or sucrose or combinations thereof function as the main ingredient. In a preferred embodiment, dextrose is utilized and the dextrose comprises approximately 50 to about 90% of the coating. The active ingredients or medicaments, in the coating may comprise as much as 30% of the coating down to very small amounts as long as the medication is efficacious. In a preferred embodiment, the flavors are powdered flavors and can range from 0.1% to approximately 5%. High-intensity sweeteners such as aspartame, sucralose, and acesulfame-k can also be used in the coating and range from approximately 0.5 to about 5% of the coating. As noted above, these high-intensity sweeteners are excellent masking agents.

**Detailed Description Text (43):**

In addition to a water insoluble gum base portion, a typical chewing gum composition includes a water soluble bulk portion and one or more flavoring agents. The water soluble portion can include bulk sweeteners, high-intensity sweeteners, flavoring agents, softeners, emulsifiers, colors, acidulants, fillers, antioxidants, and other components that provide desired attributes.

**Detailed Description Text (46):**

High-intensity artificial sweeteners can also be used, alone or in combination, with the above. Preferred sweeteners include, but are not limited to, sucralose, aspartame, salts of acesulfame, altitame, saccharin and its salts, cyclamic acid and its salts, glycerrhizinate, dihydrochalcones, thaumatin, monellin, and the like, alone or in combination. In order to provide longer lasting sweetness and flavor perception, it may be desirable to encapsulate or otherwise control the release of at least a portion

of the artificial sweetener. Such techniques as wet granulation, wax granulation, spray drying, spray chilling, fluid bed coating, coacervation, and fiber extension may be used to achieve the desired release characteristics.

CLAIMS:

providing a chewing gum that includes a tableted gum center and a coating that substantially surrounds the tableted gum center, the coating comprising at least 50% by weight of the chewing gum, the coating comprises a medicament;

chewing the chewing gum to cause the medicament to be released from the chewing gum composition into the buccal cavity of the individual; and

continuing to chew the chewing gum thereby creating a fluid pressure causing the medicament to enter the systemic system of the individual through an oral mucosa of the individual.

2. The method of claim 1 wherein the coating includes a high-intensity sweetener.

3. The method of claim 1 wherein the high-intensity sweetener is chosen from the group consisting of aspartame, sucralose, saccharin, and acesulfame-k.

4. The method of claim 1 wherein the coating is produced by alternating layers of a powder and a syrup onto the tableted gum center.

7. The method of claim 1 wherein the coating has a matte finish.

8. The method of claim 1 wherein the coating does not include a shellac layer.

providing a chewing gum having a tableted gum center and a coating that substantially surrounds the center, the coating comprising at least 50% by weight of the chewing gum, the coating comprises a medicament and not a shellac layer; and

chewing the chewing gum for at least 2 minutes in a buccal cavity of an individual chewing the chewing gum.

providing a chewing gum product that includes a tableted gum center that is substantially coated by a formulation that includes a medicament and a sufficient amount of a masking agent to provide acceptable organoleptic properties, the formulation comprising at least 50% by weight of the chewing gum product; and

chewing the chewing gum product to cause the medicament to be released from the formulation into a buccal cavity of the individual.

13. The method of claim 12 wherein the formulation includes a high-intensity sweetener.

16. The method of claim 12 wherein the masking agent comprises approximately 30% to about 99% by weight of the coating coating the center by placing alternating layers of a powder and a syrup on the center to create a coated product, at least one of the powder or syrup layers comprising at least one agent.

18. The method of claim 17 wherein the coated product comprises at least 50% by weight syrup and powder coating.

20. The method of claim 17 wherein the coating includes a high-intensity sweetener.

24. The method of claim 17 wherein the powder comprises at least 70% by weight of the coating.

25. The method of claim 17 wherein the coating does not include a shellac layer.

26. A method of providing chewing gum that includes a medicament comprising the steps of:

coating the predefined shape with at least one layer comprising a medicament.

27. The method of claim 26 wherein the coated product comprises at least 50% by weight syrup and powder coating.

29. The method of claim 26 wherein the coating includes a high-intensity sweetener.

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L2: Entry 27 of 33

File: USPT

US-PAT-NO: 5487902

DOCUMENT-IDENTIFIER: US 5487902 A

TITLE: Chewing gum composition with accelerated, controlled release of active agents

DATE-ISSUED: January 30, 1996

## INVENTOR-INFORMATION:

| NAME              | CITY    | STATE | ZIP CODE | COUNTRY |
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US-CL-CURRENT: 426/3; 426/4, 426/654

## CLAIMS:

We claim:

1. Chewing gum composition with accelerated, controlled release of substantially fat-soluble active agents, produced by combining

i) a chewing gum base having a resin component, wherein said resin component of the chewing gum base comprises at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin, and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, with

ii) one or more substantially fat-soluble active agents, additives, and at least one solubilizer in a quantity of 1-10 weight %, said solubilizer having an HLB value of 14-20.

2. Chewing gum composition as claimed in claim 1 wherein the resin component of the chewing gum base contains at least 40% of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin,

pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000.

3. Composition as claimed in claim 1 wherein the resin component of the chewing gum base contains a terpene resin of natural or synthetic origin.

4. Composition as claimed in claim 1 wherein the solubilizer of the composition is selected from the group consisting of lecithin, polyoxyethylene sorbitan fatty acid esters, fatty acid salts, mono and diacetyl tartaric acid esters of mono and diglycerides of edible fatty acids, citric acid esters of mono and diglycerides of edible fatty acids, saccharose esters of fatty acids, polyglycerol esters of fatty acids, polyglycerolesters of internal esterified castor oil acid, sodium stearoyllactylate, sodium lauryl sulfate, sorbitan esters of fatty acids, polyoxyethylated hydrogenated castor oil, blockcopolymers of ethylene oxide and propylene oxide, polyoxyethylene fatty alcohol ether, sorbitan ester of fatty acid and polyoxyethylene steraric acid ester.

5. Chewing gum composition as claimed in claim 4 wherein the solubilizer is selected from the group consisting of polyoxyethylene stearate, polyoxyethylene sorbitan fatty acid ester, mono and diacetyl tartaric acid esters of mono and diglycerides of edible fatty acids, citric acid ester of mono and diglycerides of edible fatty acids, sodium stearoyllactylate, sodium laurylsulfate, polyoxyethylated hydrogenated castor oil, blockcopolymers of ethylene oxide and propylene oxide and polyoxyethylene fatty alcohol ether.

6. Chewing gum composition as claimed in claim 1 wherein 3-6 weight % solubilizer is added to the chewing gum composition.

7. Chewing gum composition as claimed in claim 1 wherein the composition further contains up to 60 weight % of at least one carrier, which carrier forms a solid dispersion together with the active agent.

8. Composition as claimed in claim 7 wherein the carrier

is selected from the group consisting of polyethylene glycol and polyvinyl pyrrolidone.

9. Composition as claimed in claim 8 wherein the carrier is polyethyleneglycol 1000-20,000.

10. Composition as claimed in claim 1 wherein the active agent has a water-solubility of less than 10 g/100 ml.

11. Chewing gum composition as claimed in claim 10 wherein the active agent is selected from the group consisting of dietary supplement, oral and dental compositions, antiseptics, pH adjusting agents, anti-smoking agents, sweeteners, flavorings, aroma agents and medicines.

12. Chewing gum composition as claimed in claim 11 wherein the active agent is selected from the group consisting of paracetamol, benzocaine, cinnarizine, menthol, carvone, caffeine, chlorhexidine-diacetate, cyclizine hydrochloride, 1,8-cineol, nandrolone, miconazole, nystatin, aspartame, sodium fluoride, nicotine, saccharin, cetylpyridinium chloride, other quaternary ammonium-compounds, vitamin E, vitamin A, vitamin D, glibenclamide or derivatives thereof, progesterone, acetylsalicylic acid, dimenhydrinate, cyclizine, metronidazole, sodium hydrogencarbonate, the active components from ginkgo, the active components from propolis, the active components from ginseng, methadone, oil of peppermint, salicylamide, hydrocortisone and astemizole.

13. Process for the preparation of a chewing gum composition as claimed in claim 1 comprising the steps of preparing a chewing gum base on the basis of conventional chewing gum base ingredients including a resin portion, wherein the resin portion comprises at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, and then preparing a chewing gum composition while adding at

least one substantially fat-soluble active agent and 1-10 weight % of at least one solubilizer, said solubilizer having an HLB value of 14-20.

14. Process as claimed in claim 13 comprising the further step of mixing the active agent intimately with the solubilizer to form a mixture and then admixing the mixture to the chewing gum composition.

15. Process as claimed in claim 14 comprising the further step of forming a solid dispersion of the active agent in a carrier prior to mixing the active agent with the solubilizer.

16. Process for making a chewing gum composition, comprising the step of combining a solubilizer for accelerated, controlled release of substantially fat-soluble active agents with a composition comprising a chewing gum base having a resin component comprising at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, said solubilizer being present in a quantity of 1-10 weight % of said chewing gum composition and having an HLB value of 14-20.

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L2: Entry 27 of 33

File: USPT

DOCUMENT-IDENTIFIER: US 5487902 A

TITLE: Chewing gum composition with accelerated, controlled release of active agents

Brief Summary Text (66):

Examples of active agents in the form of antiseptics are for instance salts and compounds of guanidine and biguanidine (for instance chlorhexidine diacetate) and the following types of substances with limited water-solubility: quaternary ammonium compounds (for instance ceramine, chloroxylenol, crystal violet, chloramine), aldehydes (for instance paraformaldehyde), compounds of dequaline, polynoxiline, phenols (for instance thymol, para chlorophenol, cresol) hexachlorophene, salicylic anilide compounds, triclosan, halogenes (iodine, iodophores, chloroamine, dichlorocyanuric acid salts), alcohols (3,4 dichlorobenzyl alcohol, benzyl alcohol, phenoxyethanol, phenylethanol), cf. furthermore Martindale, The Extra Pharmacopoeia, 28th edition, page 547-578; metal salts, complexes and compounds with limited water-solubility, such as aluminium salts, (for instance aluminium potassium sulfate AlK(SO<sub>4</sub>)<sub>2</sub>.12 H<sub>2</sub>O) and furthermore salts, complexes and compounds of boron, barium, strontium, iron, calcium, zinc, (zinc acetate, zinc chloride, zinc gluconate), copper (copper chloride, copper sulfate), lead, silver, magnesium, sodium, potassium, lithium, molybdenum, vanadium should be included; other compositions for the care of mouth and teeth: for instance; salts, complexes and compounds containing fluorine (such as sodium fluoride, sodiummonofluorophosphate, aminofluorides, stannous fluoride), phosphates, carbonates and selenium.

## CLAIMS:

1. Chewing gum composition with accelerated, controlled release of substantially fat-soluble active agents, produced by combining

i) a chewing gum base having a resin component, wherein said resin component of the chewing gum base comprises at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin, and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, with

2. Chewing gum composition as claimed in claim 1 wherein the resin component of the chewing gum base contains at least 40% of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000.

3. Composition as claimed in claim 1 wherein the resin component of the chewing gum base contains a terpene resin of natural or synthetic origin.

5. Chewing gum composition as claimed in claim 4 wherein the solubilizer is selected from the group consisting of polyoxyethylene stearate, polyoxyethylene sorbitan fatty acid ester, mono and diacetyl tartaric acid esters of mono and diglycerides of edible fatty acids, citric acid ester of mono and diglycerides of edible fatty acids, sodium stearoyllactylate, sodium laurylsulfate, polyoxyethylated hydrogenated castor oil, blockcopolymers of ethylene oxide and propylene oxide and polyoxyethylene fatty alcohol ether.

6. Chewing gum composition as claimed in claim 1 wherein 3-6 weight % solubilizer is added to the chewing gum composition.

7. Chewing gum composition as claimed in claim 1 wherein the composition further contains up to 60 weight % of at least one carrier, which carrier forms a solid dispersion together with the active agent.

11. Chewing gum composition as claimed in claim 10 wherein the active agent is selected from the group consisting of dietary supplement, oral and dental compositions, antiseptics, pH adjusting agents, anti-smoking agents, sweeteners, flavorings, aroma agents and medicines.

12. Chewing gum composition as claimed in claim 11 wherein the active agent is selected from the group consisting of paracetamol, benzocaine, cinnarizine, menthol, carvone, caffeine, chlorhexidine-diacetate, cyclizine hydrochloride, 1,8-cineol, nandrolone, miconazole, nystatin, aspartame, sodium fluoride, nicotine, saccharin, cetylpyridinium chloride, other quaternary ammonium-compounds, vitamin E, vitamin A, vitamin D, glibenclamide or derivatives thereof, progesterone, acetylsalicylic acid, dimenhydrinate, cyclizine, metronidazole, sodium hydrogencarbonate, the active components from ginkgo, the active components from propolis, the active components from ginseng, methadone, oil of peppermint, salicylamide, hydrocortisone and astemizole.

13. Process for the preparation of a chewing gum composition as claimed in claim 1 comprising the steps of preparing a chewing gum base on the basis of conventional chewing gum base ingredients including a resin portion, wherein the resin portion comprises at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, and then preparing a chewing gum composition while adding at least one substantially fat-soluble active agent and 1-10 weight % of at least one solubilizer, said solubilizer having an HLB value of 14-20.

14. Process as claimed in claim 13 comprising the further step of mixing the active agent intimately with the solubilizer to form a mixture and then admixing the mixture to the chewing gum composition.

16. Process for making a chewing gum composition, comprising the step of combining a solubilizer for accelerated, controlled release of substantially fat-soluble active agents with a composition comprising a chewing gum base having a resin component comprising at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, said solubilizer being present in a quantity of 1-10 weight % of said chewing gum composition and having an HLB value of 14-20.

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| <u>L7</u>                                           | 16 and triclosan                       | 2                | <u>L7</u>       |
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| <u>L4</u>                                           | 11 and coating.clm.                    | 138              | <u>L4</u>       |
| <u>L3</u>                                           | 12 and triclosan.clm.                  | 9                | <u>L3</u>       |
| <u>L2</u>                                           | 11 and triclosan                       | 33               | <u>L2</u>       |
| <u>L1</u>                                           | chewing gum.clm.                       | 1007             | <u>L1</u>       |

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| <u>L10</u>                                          | 19 and triclosan                       | 22               | <u>L10</u>      |
| <u>L9</u>                                           | 18 and 11                              | 50               | <u>L9</u>       |
| <u>L8</u>                                           | ( cetylpyridinium or cetyl pyridinium) | 4319             | <u>L8</u>       |
| <u>L7</u>                                           | 16 and triclosan                       | 2                | <u>L7</u>       |
| <u>L6</u>                                           | 14 and active.clm.                     | 18               | <u>L6</u>       |
| <u>L5</u>                                           | 12 and 14                              | 3                | <u>L5</u>       |
| <u>L4</u>                                           | 11 and coating.clm.                    | 138              | <u>L4</u>       |
| <u>L3</u>                                           | 12 and triclosan.clm.                  | 9                | <u>L3</u>       |
| <u>L2</u>                                           | 11 and triclosan                       | 33               | <u>L2</u>       |
| <u>L1</u>                                           | chewing gum.clm.                       | 1007             | <u>L1</u>       |

END OF SEARCH HISTORY

**WEST**  

L10: Entry 1 of 22

File: USPT

US-PAT-NO: 6365130

DOCUMENT-IDENTIFIER: US 6365130 B1

TITLE: Antimicrobial chewing gum

DATE-ISSUED: April 2, 2002

## INVENTOR-INFORMATION:

| NAME                | CITY   | STATE | ZIP CODE | COUNTRY |
|---------------------|--------|-------|----------|---------|
| Barry; John E.      | Derry  | NH    |          |         |
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US-CL-CURRENT: 424/48; 424/405, 424/618, 424/641, 424/649

## CLAIMS:

What is claimed is:

1. An antimicrobial chewing gum comprising:(a) a chewing gum base and

(b) antimicrobial inorganic ceramic particles comprising ion-exchanged antimicrobial metal cations

wherein the antimicrobial inorganic ceramic particles are present in an amount of from about 0.05 to 50 weight percent, based on the weight of the chewing gum composition, and are capable of releasing the antimicrobial metal cations in an antimicrobially effective amount.

2. A chewing gum of claim 1 wherein the antimicrobial metal ions are present in an amount from about 0.1 to 15 weight percent of the ceramic particles.3. A chewing gum of claim 1 wherein the antimicrobial metal ions are selected from silver, copper and zinc.4. A chewing gum of claim 1 wherein the gum achieves antimicrobial action during chewing.

5. The chewing gum according to claim 1 wherein said inorganic ceramic particles are dispersed in said chewing gum and are present in the amount of from 0.05 to 50 weight percent and an average particle size of from at 0.2 to 40 .mu.m.

6. The antimicrobial chewing gum of claim 1 wherein the antimicrobial ceramic particles are selected from the group consisting of zeolites, hydroxy apatite and zirconium phosphates.

7. The antimicrobial chewing gum of claim 1 wherein the antimicrobial metal cations are silver cations.

8. The antimicrobial chewing gum of claim 1 wherein the release rate of the antimicrobial metal cations is about 2,500 parts per million per minute while being chewed.

9. An antimicrobial chewing gum comprising:

(a) a chewing gum base and

(b) antimicrobial zeolite particles comprising ion-exchanged antimicrobial metal cations

wherein the antimicrobial zeolite particles are present in an amount of from about 0.05 to 50 weight percent, based on the weight of the chewing gum composition, and are capable of releasing the antimicrobial metal cations in an antimicrobially effective amount.

10. A chewing gum of claim 9 wherein the ion-exchanged zeolite is present in an amount of from about 0.1 to 25 weight percent.

11. The antimicrobial chewing gum of claim 9 wherein the antimicrobial metal ions are selected from the group consisting of gold, silver, copper and zinc ions.

12. The antimicrobial chewing gum of claim 9 wherein the antimicrobial metal cations are silver cations.

13. The antimicrobial chewing gum of claim 9 wherein the release rate of the antimicrobial metal cations is about 2,500 parts per million per minute while being chewed.

14. A method for killing, reducing, or inhibiting growth of oral microbes comprising the step of masticating a chewing gum according to claim 1.

15. A method for killing, reducing, or inhibiting growth of oral microbes comprising the step of masticating a chewing gum according to claim 1, wherein the inorganic ceramic particles are zeolite particles.

16. A method for killing, reducing, or inhibiting growth of oral microbes comprising the step of masticating a chewing gum according to claim 1, wherein the metal ions are selected from silver, copper, and zinc.

17. A method for killing, reducing, or inhibiting growth of oral microbes comprising the step of masticating a chewing gum of claim 1, wherein the release rate of antimicrobial metal ions is about 2,500 parts per million per minute.

18. A method for killing, reducing or inhibiting growth of oral microbes comprising the step of masticating an antimicrobial chewing gum comprising:

(a) a chewing gum base and

(b) antimicrobial inorganic ceramic particles comprising ion-exchanged antimicrobial metal cations

wherein the antimicrobial zeolite particles are present in an amount of from about 0.05 to 50 weight percent, based on the weight of the chewing gum composition, and are capable of releasing the antimicrobial metal cations in an antimicrobially effective amount for a sufficient period of time to allow for the release of an antimicrobially effective amount of the antimicrobial metal cations.

19. The method of claim 18 wherein the inorganic ceramic particles are zeolite particles ion exchanged with antimicrobial metal ions selected from the group consisting of silver, copper and zinc cations.

20. The method of claim 18 wherein the inorganic ceramic particles are ion-exchanged silver zeolite particles.

21. The method of claim 18 wherein the method results in the reduction of dental caries on teeth, a reduction in the incidence of gingivitis or the reduction in the formation of plaque on teeth.

**WEST** Generate Collection 

L10: Entry 2 of 22

File: USPT

US-PAT-NO: 6355229

DOCUMENT-IDENTIFIER: US 6355229 B1

TITLE: Oral composition containing cetylpyridinium chloride and guar hydroxypropyltrimonium chloride and method of using the same

DATE-ISSUED: March 12, 2002

## INVENTOR-INFORMATION:

| NAME             | CITY     | STATE | ZIP CODE | COUNTRY |
|------------------|----------|-------|----------|---------|
| Adamy; Steven T. | Hamilton | NJ    |          |         |

US-CL-CURRENT: 424/54; 424/435, 424/440, 424/464, 424/48, 424/49

## CLAIMS:

What is claimed is:

1. An oral composition comprising:
  - a) an antibacterial effective amount of cetylpyridinium chloride;
  - b) an effective amount of guar hydroxypropyltrimonium chloride, sufficient to bind to compounds which undesirably bind to cetylpyridinium chloride thereby enabling the cetylpyridinium chloride to effectively bind to tooth surfaces and perform an antibacterial function; and
  - c) an orally acceptable carrier.
2. The oral composition of claim 1, wherein the orally acceptable carrier is selected from the group consisting of water, saline, alcohol, glycerin, oil and mixtures thereof.
3. The oral composition of claim 1, wherein the oral composition is in a form selected from the group consisting of a mouthwash, a dentifrice, a chewing gum, and a lozenge.

4. The oral composition of claim 1, the amount of cetylpyridinium chloride is present from about 0.01 to 1.0% by weight based on the total weight of the oral composition.
5. The oral composition of claim 1, wherein the amount of guar hydroxypropyltrimonium chloride is present from about 0.1 to 3.0% by weight based on the total weight of the oral composition.
6. The oral composition of claim 3 wherein the dentifrice is a toothpaste.
7. The oral composition of claim 6 further comprising at least one material selected from the group consisting of thickening agents, whiteners, flavorants, humectants, desensitizing agents, abrasive agents, alkali metal bicarbonate salts, and fluoride supplying compounds.
8. The oral composition of claim 7 wherein the abrasive agents are selected from the group consisting of sodium metaphosphate, potassium metaphosphate, tricalcium phosphate, dicalcium phosphate dihydrate, anhydrous dicalcium phosphate, calcium pyrophosphate, zinc orthophosphate, alumina, hydrated alumina, aluminum silicate, bentonite, calcium carbonate, and sodium bicarbonate.
9. The oral composition of claim 1 further comprising at least one sweetening agent.
10. The oral composition of claim 9 comprising at least one high potency sweetening agent.
11. The oral composition of claim 1 further comprising at least one additional antibacterial agent.
12. The oral composition of claim 11 wherein the at least one additional antibacterial agent is present in an amount of from about 0.1 to 2% by weight based on the total weight of the oral composition.
13. The oral composition of claim 7 wherein the abrasive agent is present in an amount of from about 0.5 to 70% by weight.

14. The oral composition of claim 7 wherein the fluoride supplying compound is present in an amount sufficient to deliver from about 100 to 5,000 ppm of available fluoride based on the composition.

15. The oral composition of claim 7 wherein the alkali metal bicarbonate salts are present in an amount of up to about 75% by weight based on the total weight of the oral composition.

16. The oral composition of claim 15 wherein the amount of the alkali metal bicarbonate salts are present in an amount of from about 5 to 40% by weight.

17. The oral composition of claim 7 wherein the thickening agent is present in an amount of from about 0.1 to 3.0% by weight based on the total weight of the composition.

18. The oral composition of claim 1 wherein the orally acceptable carrier is present in an amount of from about 20 to 99% by weight based on the total weight of the composition.

19. The oral composition of claim 7 wherein the humectant is present in an amount of from about 1 to 50% by weight based on the total weight of the composition.

20. A method of reducing the presence of microorganisms in an oral cavity of a warm-blooded animal, said method comprising administering to the oral cavity an effective amount of the oral composition of claim 1.

**WEST**  

L10: Entry 2 of 22

File: USPT

**DOCUMENT-IDENTIFIER:** US 6355229 B1**TITLE:** Oral composition containing cetylpyridinium chloride and guar hydroxypropyltrimonium chloride and method of using the same**Abstract Text (1):**

An oral composition comprises an antibacterial effective amount of cetylpyridinium chloride, an effective amount of guar hydroxypropyltrimonium chloride, sufficient to bind to compounds which undesirably bind to cetylpyridinium chloride thereby enabling the cetylpyridinium chloride to effectively bind to tooth surfaces and perform an antibacterial function, and an orally acceptable carrier.

**Brief Summary Text (2):**

The present invention relates to oral compositions containing cetylpyridinium chloride as an active antibacterial agent which may be used to inhibit formation of plaque, oral malodor, gingivitis, periodontal disease and the like. The oral composition contains the active agent and an effective amount of guar hydroxypropyltrimonium chloride which enables the active agent to more effectively bind to tooth surfaces to perform its antibacterial function.

**Brief Summary Text (4):**

Cetylpyridinium chloride (CPC) is well known as an antibacterial agent especially for the inhibition of plaque formation. This antibacterial agent has been used in commercial mouthwash products such as Scope.RTM. and Cepacol.RTM. and several other types of oral care products. The environment of such commercial mouthwash products enables cetylpyridinium chloride to freely contact those oral surfaces which may harbor unwanted microorganisms. These microorganisms contribute to both the initiation and progression of gingivitis, plaque, periodontal disease, and/or breath malodor in the oral cavity of warm-blooded animals. Such conditions are usually treated by reducing the presence of the microorganisms in the oral cavity through the use of dental care products containing antibacterial agents including cetylpyridinium chloride.

**Brief Summary Text (5):**

The antibacterial activity of cetylpyridinium chloride is, without being bound to the theory, believed to be linked to the cationic charge of its amine group. Thus, cetylpyridinium chloride is attracted to and binds to negatively-charged protein moieties on the cell membrane or cell wall of the microorganism and to tooth surfaces which are also typically negatively charged. The resulting attachment to microorganisms disrupts the cell wall structure causing leakage of the intracellular fluids, eventually killing the associated microorganism. However, cetylpyridinium chloride is generally not effective in many systems because of its tendency to complex with components that carry a negative charge. When bound to negatively charged particles in this manner, cetylpyridinium chloride is unavailable for effective contact with tooth surfaces and microorganisms, thereby rendering the active agent ineffective for its intended purpose.

**Brief Summary Text (6):**

For this reason, cetylpyridinium chloride has not been totally effective in typical oral care products for the treatment and/or prevention of gingivitis, plaque, periodontal disease, and/or breath malodor. For example, toothpaste compositions typically include anionic surfactants and artificial sweetening agents. These components of toothpaste compositions typically bind to cetylpyridinium chloride and thereby render the same ineffective or substantially less effective as an antibacterial agent. Other components typically found in a toothpaste composition such as abrasives also bind to cetylpyridinium chloride. Accordingly, the use of cetylpyridinium chloride in toothpaste compositions has been problematic. Even in commercial mouthwash products that contain cetylpyridinium chloride, the availability of cetylpyridinium chloride at tooth surfaces is very low and therefore its antibacterial effectiveness is limited.

**Brief Summary Text (7):**

It would be an advance in the art of oral compositions if such compositions contain an effective amount of cetylpyridinium chloride in which antibacterial activity is not materially diminished by the presence of other components which tend to bind to the active agent.

**Brief Summary Text (9):**

The present invention is generally directed to an oral composition in which cetylpyridinium chloride is present as an antibacterial agent as part of an effective oral hygiene program. In a particular aspect of the present invention, there is provided an oral composition comprising:

**Brief Summary Text (10):**

- a) an antibacterial effective amount of cetylpyridinium chloride;

**Brief Summary Text (11):**

- b) an effective amount of guar hydroxypropyltrimonium chloride sufficient to bind to compounds which undesirably bind to cetylpyridinium chloride thereby enabling the cetylpyridinium chloride to effectively bind to tooth surfaces and perform an antibacterial function; and

**Brief Summary Text (16):**

The oral composition of the present invention includes an antibacterial effective amount of cetylpyridinium chloride typically in the range of from about 0.01 to 1.0% by weight, preferably from about 0.1 to 0.75% by weight, and other oral care components which do not materially prevent cetylpyridinium chloride from binding to tooth surfaces to perform an antibacterial function. A typical toothpaste composition may contain 0.5% by weight of cetylpyridinium chloride while a typical mouthwash composition may contain 0.125% by weight. The phrase "do not materially prevent" as used herein means that a sufficient amount of cetylpyridinium chloride is and remains available to bind to oral surfaces including tooth surfaces to perform an effective antibacterial function in the oral cavity.

**Brief Summary Text (19):**

Cetylpyridinium chloride is cationic and therefore is attracted to negative surfaces and moieties. Tooth surfaces typically have a negative charge and therefore there is a natural attraction of cetylpyridinium chloride for tooth surfaces. However, many conventional oral care products contain components, including those found in toothpaste, which are anionic. Such negatively charged components bind to cetylpyridinium chloride and therefore make the antibacterial agent less available for binding to tooth surfaces and microorganisms.

**Brief Summary Text (20):**

In accordance with one aspect of the present invention, it has been discovered that the employment of guar hydroxypropyltrimonium chloride at least reduces and may substantially eliminate the ability of such compounds to bind to and diminish the antibacterial activity of cetylpyridinium chloride.

**Brief Summary Text (21):**

By way of example, certain sweetening agents known for use in oral compositions, such as saccharin, acesulfame, and cyclamate have been found to bind to and thereby inhibit the antibacterial activity of cetylpyridinium chloride when compared to compositions which do not contain such particular sweetening agents. In the oral composition of the present invention, the presence of typical sweetening agents does not adversely affect the antibacterial activity of cetylpyridinium chloride when guar hydroxypropyltrimonium chloride is present in effective amounts.

**Brief Summary Text (23):**

The present invention also provides a method of reducing the presence of microorganisms in a oral cavity comprising administering to the oral cavity an effective amount of an oral composition comprising an antibacterial effective amount of cetylpyridinium chloride and an effective amount of guar hydroxypropyltrimonium chloride. The present oral composition enables cetylpyridinium chloride to effectively bind to the tooth surfaces to perform an antibacterial function.

**Brief Summary Text (24):**

Guar hydroxypropyltrimonium chloride is incorporated into the oral composition of the present invention in an effective amount which is sufficient to bind to compounds which have the ability to bind to cetylpyridinium chloride. If a sufficient amount of such compounds can no longer bind to the antibacterial agent, then a sufficient amount of cetylpyridinium chloride will be available to perform its antibacterial function. Generally, guar hydroxypropyltrimonium chloride will be present in an amount of from about 0.1 to 3.0% by weight of the total weight of the oral composition, preferably from about 0.4 to 2.5% by weight. A typical toothpaste composition may contain 2% by weight while a typical mouthwash composition may contain 0.5% by weight of the guar hydroxypropyltrimonium chloride.

**Brief Summary Text (25):**

The concentration of cetylpyridinium chloride and guar hydroxypropyltrimonium chloride will depend, in part, on the form of the composition (i.e. a solution such as mouthwash or gargle or a semi-solid such as a toothpaste, lozenge, and chewing gum) which is used to deliver cetylpyridinium chloride to the gingiva/muscosal tissue and/or the tooth surfaces. For example,

solutions containing cetylpyridinium chloride are generally more efficient in contacting the tissue and tooth surfaces than semi-solid compositions and therefore may require a lower concentration of the antibacterial agent.

Brief Summary Text (34):

The present oral composition may optionally contain a sweetening agent for masking the objectionable taste often associated with cetylpyridinium chloride and improving the organoleptic properties of the oral composition. Suitable sweetening agents include high potency sweeteners such as cyclamate, saccharine, acesulfame, and sucralose, and the orally acceptable salts thereof, and bulk sweeteners such as xylitol, sorbitol, erythritol. Additional sweeteners such as sucrose, lactose, maltose, glucose, and fructose may also be used, but are not desirable due to their cariogenic potential.

Brief Summary Text (36):

Antibacterial agents other than cetylpyridinium chloride may be optionally present in the oral compositions of the present invention. Such agents may include, but not limited to, chlorhexidine gluconate; benzalkonium chloride; benzethonium chloride; domiphen bromide; zinc salts such as zinc chloride, citrate or gluconate; stannous salts such as stannous chloride and fluoride; triclosan; sanguinarine chloride; and essential oils such as eucalyptol, thymol, menthol and eugenol. If present, the additional antibacterial agents generally comprise up to about 2% by weight, preferably from about 0.1 to 2% by weight of the composition of the present invention.

Brief Summary Text (44):

In accordance with a preferred aspect of the present invention, a cetylpyridinium chloride-containing toothpaste composition containing guar hydroxypropyltrimonium chloride alone or in combination with a sweetening agent, especially sodium saccharin dihydrate provides significant availability of the antibacterial agent to bind to tooth surfaces.

Brief Summary Text (45):

A safe and effective amount of the compositions of the present invention may be topically applied in several conventional ways to the mucosal tissue of the oral cavity, to the gingival tissue of the oral cavity, and/or to the tooth surface, for reducing the levels of undesirable oral microorganisms residing thereon. For example, the gingival or mucosal tissue may be rinsed with a solution (e.g., mouthwash, mouth spray) containing cetylpyridinium chloride and guar hydroxypropyltrimonium chloride, or if cetylpyridinium chloride and guar hydroxypropyltrimonium chloride are included in a dentifrice (e.g., toothpaste, tooth gel, or tooth powder), the gingival or mucosal tissue is bathed in the liquid and/or in the lather generated by brushing of the teeth.

Brief Summary Text (46):

Other non-limiting examples include applying a non-abrasive gel or paste, which contains cetylpyridinium chloride and guar hydroxypropyltrimonium chloride, directly to the gingival/mucosal tissue or to the tooth surface with or without an oral care implement; chewing gum that contains cetylpyridinium chloride and guar hydroxypropyltrimonium chloride; chewing or sucking on a breath tablet or lozenge which contains cetylpyridinium chloride and guar hydroxypropyltrimonium chloride. Preferred methods of using compositions of the present invention include applying cetylpyridinium chloride and guar hydroxypropyltrimonium chloride to the gingival/mucosal tissue and/or the tooth surface via rinsing with a mouthwash solution and via brushing with a dentifrice. Other methods of applying cetylpyridinium chloride and guar hydroxypropyltrimonium chloride to the gingival/mucosal tissue and tooth surfaces are apparent to those skilled in the art.

Detailed Description Text (2):

Effect of Guar Hydroxypropyltrimonium Chloride on Adsorption of Cetylpyridinium Chloride in the Presence of a Sweetening Agent

Detailed Description Text (3):

In vitro studies of cetylpyridinium chloride absorption were performed with the initial step of formulating a model oral surface. Disks of hydroxyapatite (HAP, calcium phosphate hydroxide, Ca.<sub>10</sub>(PO<sub>4</sub>)<sub>6</sub>(OH)<sub>2</sub>) measuring 0.5 inch diameter and 0.04 inch thick were obtained from Clarkson Chromatography Products (Williamsport, Pa.). The disks were hydrated in deionized water for one hour and then allowed to air dry.

Detailed Description Text (5):

Cetylpyridinium chloride adsorption was tested by soaking the disks in a test solution. The compositions of the test solutions are shown and listed in Table 1. Guar hydroxypropyltrimonium chloride was obtained from Hercules Incorporated, Wilmington, Del., which is marketed under the trade name "N-Hance 3215". The disks were each soaked in 5 mL of the test solution for 10 minutes in a polystyrene petri dish (35 mm diameter.times.10 mm deep, from Becton Dickson). The disks were then removed, rinsed for 3 seconds with deionized water on each side with a wash bottle.

Detailed Description Text (6):

Adsorbed cetylpyridinium chloride was extracted by soaking the disks in a solution used as a mobile phase for

cetylpyridinium chloride detection in liquid chromatography. The extractant solution was composed of 60 parts of a 20 mM phosphate buffer and 40 parts methanol, in which was dissolved 30 mM cetyltrimethylammonium bromide (CTAB). The disks were soaked in 5 mL of the extractant solution for 2 hours. The extractant was then analyzed for cetylpyridinium chloride using high-pressure liquid chromatography.

Detailed Description Text (7):

The composition of each test solution and the results of cetylpyridinium chloride absorption tests are shown in Table 1.

Detailed Description Text (8):

As shown in Table 1, the addition of guar hydroxypropyltrimonium chloride to a solution containing saccharin increased the adsorption of cetylpyridinium chloride by about a factor of at least two as compared to the solution containing only cetylpyridinium chloride and saccharin.

Detailed Description Text (10):

Effect of Guar Hydroxypropyltrimonium Chloride on Adsorption of Cetylpyridinium Chloride in the Presence of an Emollient

Detailed Description Text (11):

In vitro studies of cetylpyridinium chloride adsorption were performed with the initial step of formulating a model oral surface. Disks of hydroxyapatite (HAP, calcium phosphate hydroxide, Ca<sub>10</sub>(PO<sub>4</sub>)<sub>6</sub>(OH)<sub>2</sub>) measuring 0.5 inch diameter and 0.04 inch thick were obtained from Clarkson Chromatography Products (Williamsport, Pa.). The disks were hydrated in deionized water for one hour and then allowed to air dry.

Detailed Description Text (13):

Cetylpyridinium chloride absorption was tested by soaking the disks in a test solution. The test solutions are shown and listed in Table 2. Guar hydroxypropyltrimonium chloride was obtained from Hercules Incorporated, Wilmington, Del., which is marketed under the trade name "N-Hance 3215". Eldew CL-301 or cholesteryl/behenyl/octyldodecyl lauroyl glutamate, is an emollient derived from L-glutamic acid, lauric acid and three alcohols (cholesterol, 2-octyldodecanol, and behenol), and is marketed and manufactured by Ajinomoto Inc. (Tokyo, Japan). The disks were each soaked in 5 mL of the test solution for 10 minutes in a polystyrene petri dish (35 mm diameter.times.10 mm deep, from Becton Dickson). The disks were then removed, rinsed for 3 seconds with deionized water on each side with a wash bottle.

Detailed Description Text (14):

Adsorbed cetylpyridinium chloride was extracted by soaking the disks in a solution used as a mobile phase for cetylpyridinium chloride detection in liquid chromatography. The extractant solution was composed of 60 parts of a 20 mM phosphate buffer and 40 parts methanol, in which was dissolved 30 mM cetyltrimethylammonium bromide (CTAB). The disks were soaked in 5 mL of the extractant solution for 2 hours. The extractant was then analyzed for cetylpyridinium chloride using high-pressure liquid chromatography.

Detailed Description Text (15):

The composition of each test solution and the results of cetylpyridinium chloride adsorption tests are shown in Table 2.

Detailed Description Text (16):

As shown in Table 2, the addition of guar hydroxypropyltrimonium chloride to a solution containing Eldew CL-301 increased the adsorption of cetylpyridinium chloride by about a factor of at least four as compared to the solution containing only cetylpyridinium chloride and Eldew CL-301.

CLAIMS:

a) an antibacterial effective amount of cetylpyridinium chloride;

b) an effective amount of guar hydroxypropyltrimonium chloride, sufficient to bind to compounds which undesirably bind to cetylpyridinium chloride thereby enabling the cetylpyridinium chloride to effectively bind to tooth surfaces and perform an antibacterial function; and

3. The oral composition of claim 1, wherein the oral composition is in a form selected from the group consisting of a mouthwash, a dentifrice, a chewing gum, and a lozenge.

4. The oral composition of claim 1, the amount of cetylpyridinium chloride is present from about 0.01 to 1.0% by weight based on the total weight of the oral composition.



WEST

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L10: Entry 2 of 22

File: USPT

Mar 12, 2002

US-PAT-NO: 6355229

DOCUMENT-IDENTIFIER: US 6355229 B1

TITLE: Oral composition containing cetylpyridinium chloride and guar hydroxypropyltrimonium chloride and method of using the same

DATE-ISSUED: March 12, 2002

## INVENTOR-INFORMATION:

| NAME             | CITY     | STATE | ZIP CODE | COUNTRY |
|------------------|----------|-------|----------|---------|
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## ASSIGNEE-INFORMATION:

| NAME                      | CITY      | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|---------------------------|-----------|-------|----------|---------|-----------|
| Church & Dwight Co., Inc. | Princeton | NJ    |          |         | 02        |

APPL-NO: 09/ 893766 [PALM]

DATE FILED: June 27, 2001

INT-CL: [07] A61 K 7/16, A61 K 7/22, A61 K 9/20, A61 K 9/68

US-CL-ISSUED: 424/54; 424/48, 424/49, 424/435, 424/440, 424/464

US-CL-CURRENT: 424/54; 424/435, 424/440, 424/464, 424/48, 424/49

FIELD-OF-SEARCH: 424/48, 424/49, 424/54, 424/435, 424/440, 424/464

## PRIOR-ART-DISCLOSED:

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| PAT-NO                                                  | ISSUE-DATE     | PATENTEE-NAME    | US-CL      |
|---------------------------------------------------------|----------------|------------------|------------|
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| <input type="checkbox"/> <a href="#"><u>5013763</u></a> | May 1991       | Tubesing et al.  | 424/195.18 |
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| <input type="checkbox"/> <a href="#"><u>5076953</u></a> | December 1991  | Jordan et al.    | 510/151    |
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| <input type="checkbox"/> <a href="#"><u>5370881</u></a> | December 1994  | Fuisz            |            |
| <input type="checkbox"/> <a href="#"><u>5374638</u></a> | December 1994  | Hauschild        |            |
| <input type="checkbox"/> <a href="#"><u>5376360</u></a> | December 1994  | Domke et al.     |            |
| <input type="checkbox"/> <a href="#"><u>5523079</u></a> | June 1996      | Gough            | 424/70.11  |
| <input type="checkbox"/> <a href="#"><u>5622689</u></a> | April 1997     | Lukacovic        |            |
| <input type="checkbox"/> <a href="#"><u>5801116</u></a> | September 1998 | Cottrell et al.  | 502/404    |
| <input type="checkbox"/> <a href="#"><u>5849268</u></a> | December 1998  | Lukacovic        |            |
| <input type="checkbox"/> <a href="#"><u>5849271</u></a> | December 1998  | Lukacovic        |            |
| <input type="checkbox"/> <a href="#"><u>5948390</u></a> | September 1999 | Nelson et al.    |            |
| <input type="checkbox"/> <a href="#"><u>6274128</u></a> | August 2001    | Bergmann et al.  | 424/70.1   |

## FOREIGN PATENT DOCUMENTS

| FOREIGN-PAT-NO | PUBN-DATE     | COUNTRY | US-CL |
|----------------|---------------|---------|-------|
| 0 009 408      | April 1980    | EP      |       |
| 0 422 803      | April 1991    | EP      |       |
| 0 480 811      | April 1992    | EP      |       |
| 0 507 598      | October 1992  | EP      |       |
| 0 920 857      | June 1999     | EP      |       |
| WO 90/15592    | June 1990     | WO      |       |
| WO 97/46217    | December 1997 | WO      |       |

ART-UNIT: 1614

PRIMARY-EXAMINER: Rose; Shep K.

## ABSTRACT:

An oral composition comprises an antibacterial effective amount of cetylpyridinium chloride, an effective amount of guar hydroxypropyltrimonium chloride, sufficient to bind to compounds which undesirably bind to cetylpyridinium chloride thereby enabling the cetylpyridinium chloride to effectively bind to tooth surfaces and perform an antibacterial function, and an orally acceptable carrier.

20 Claims, 0 Drawing figures

**WEST**  

L10: Entry 13 of 22

File: USPT

US-PAT-NO: 5711961

DOCUMENT-IDENTIFIER: US 5711961 A

TITLE: Pharmaceutical compositions based on chewing gum and a method for the preparation thereof

DATE-ISSUED: January 27, 1998

## INVENTOR-INFORMATION:

| NAME               | CITY  | STATE | ZIP CODE | COUNTRY |
|--------------------|-------|-------|----------|---------|
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| Seneci; Alessandro | Milan |       |          | IT      |

US-CL-CURRENT: 424/441; 424/440, 426/3, 426/5

## CLAIMS:

We claim:

1. Chewing gum tablet comprising:a mixture of a chewing gum base and sugary microgranules;

a component adsorbed onto said sugary microgranules selected from the group consisting of an additive agent and an active ingredient; and

a lacquer coating on the tablet selected from the group consisting of pharmaceutically acceptable celluloses and polyethylene glycols.

2. Chewing gum tablet according to claim 1, wherein said additive agent is a flavoring agent.3. Chewing gum tablet according to claim 1, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.4. Chewing gum tablet according to claim 1, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl

cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.

5. Chewing gum tablet according to claim 1, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and polyethylene glycol 400.

6. Chewing gum tablet according to claim 1, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.

7. Chewing gum tablet according to claim 2, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood levels.

8. A method of preparing a tablet, comprising the steps of:

- a) freezing chewing gum in pellet form to a temperature of between -20.degree. C. and -25.degree. C. to form frozen gum;
- b) grinding said frozen gum to a particle size of between 60 and 190 mesh to form ground chewing gum;
- c) adding to said ground chewing gum sugary microgranules having adsorbed onto a surface thereof a component selected from the group consisting of an additive agent and an active ingredient to form a granular mixture;
- d) compressing said granular mixture to form tablets; and
- e) coating said tablets with a lacquer comprising a pharmaceutically acceptable celluloses or a polyethylene glycol in a solvent.

9. A method according to claim 8, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.

10. A method according to claim 9, wherein said additive agent is selected from the group consisting of a

lubricant and a flavoring agent.

11. A method according to claim 10, wherein said active ingredient is added to the mixture of ground chewing gum, sweetener, lubricant and flavoring agent in the form of microencapsulated or otherwise delayed release coated particles.

12. A method according to claim 8, wherein said solvent is selected from the group consisting of water, an alcohol, acetone, and mixtures thereof.

13. A method according to claim 9, wherein said sweetener is selected from the group consisting of sugars, polyalcohols used as sweeteners, saccharin, acesulfame, aspartame and mixtures thereof.

14. A method according to claim 13, wherein the sugar is selected from the group consisting of dextrose, glucose, sucrose, invert sugar, fructose, mannose and maltose.

15. A method according to claim 13, wherein the polyalcohols are selected from the group consisting of sorbitol, mannitol, maltitol and xylitol.

16. A method according to claim 9, wherein the mixture of gum and sweetener is granulated moist and is dried on a fluid bed.

17. A method according to claim 8, wherein the mixture of said frozen chewing gum pellets and said sugary microgranules is granulated in moistened condition and dried on a fluid bed and then tablets are prepared by compression therefrom.

18. A method according to claim 10, wherein the lubricant is selected from the group consisting of alkali-metal or alkaline-earth metal stearates, stearic acid, hydrogenated vegetable oils and other lubricants used in the preparation of tablets for pharmaceutical use, and is added in an mount of between 0.2% and 2% by weight relative to the weight of the composition.

19. A method according to claim 10, wherein microgranular cellulose and/or precipitated silica are added together with said lubricant.

20. A method according to claim 19, wherein the microgranular cellulose is added in an amount of between 0.1% and 2% by weight.

21. A method according to claim 19, wherein the precipitated silica is added in quantities of between 0.05% and 1% by weight.

22. A method according to claim 8, wherein the flavoring agent is in liquid or powder form.

23. A method according to claim 8, wherein the lacquer is sprayed in a heated vessel with hot air.

24. A chewing gum composition comprising:

a mixture of a chewing gum base and sugary microgranules;  
a component adsorbed onto said sugary microgranules selected from the group consisting of an additive agent and an active ingredient; and

a lacquer coating on said microgranules selected from the group consisting of pharmaceutically acceptable cellulosics and polyethylene glycols.

25. Chewing gum composition according to claim 24, wherein said additive agent is a flavoring agent.

26. Chewing gum composition according to claim 24, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.

27. Chewing gum composition according to claim 24, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.

28. Chewing gum composition according to claim 24, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and

polyethylene glycol 400.

29. Chewing gum composition according to claim 24, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.

30. Chewing gum tablet according to claim 26, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood levels.

31. A method of preparing a chewing gum composition, comprising the steps of:

a) providing sugary microgranules having adsorbed onto a surface thereof a component selected from the group consisting of an additive agent and an active ingredient;

b) coating said sugary microgranules with a lacquer comprising a pharmaceutically acceptable celluloses or a polyethylene glycol in a solvent to form coated microgranules;

c) mixing said coated microgranules with frozen ground chewing gum to form a chewing gum composition.

32. A method according to claim 31, wherein said chewing gum is frozen in pellet form to a temperature of between -20.degree. C. and -25.degree. C. and ground to a particle size of between 60 and 190 mesh.

33. A method according to claim 31, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.

34. A method according to claim 31, wherein said additive agent is selected from the group consisting of a lubricant and a flavoring agent.

35. A method according to claim 31, wherein said active ingredient is in the form of microencapsulated or otherwise delayed release coated particles.

36. A method according to claim 31, wherein said solvent is selected from the group consisting of water, an alcohol, acetone, and mixtures thereof.

37. A method according to claim 33, wherein said sweetener is selected from the group consisting of sugars, polyalcohols used as sweeteners, saccharin, acesulfame, aspartame and mixtures thereof.

38. A method according to claim 37, wherein the sugar is selected from the group consisting of dextrose, glucose, sucrose, invert sugar, fructose, mannose and maltose.

39. A method according to claim 37, wherein the polyalcohols are selected from the group consisting of sorbitol, mannitol, maltitol and xylitol.

40. A method according to claim 34, wherein the lubricant is selected from the group consisting of alkali-metal or alkaline-earth metal stearates, stearic acid, hydrogenated vegetable oils and other lubricants used in the preparation of tablets for pharmaceutical use, and is added in an amount of between 0.2% and 2% by weight relative to the weight of the composition.

41. A method according to claim 34, wherein the flavoring agent is in liquid or powder form.

42. A method according to claim 31, wherein the lacquer is sprayed in a heated vessel with hot air.

43. A method according to claim 31 and further including the step of compressing the chewing gum composition to form a tablet.

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L10: Entry 13 of 22

File: USPT

DOCUMENT-IDENTIFIER: US 5711961 A

TITLE: Pharmaceutical compositions based on chewing gum and a method for the preparation thereof

Detailed Description Paragraph Table (1):

1. VITAMIN C - 1.5 g of gum containing 250 mg of Vitamin C. Gum base 0.800 g Sorbitol 0.400 g Vitamin C, 98% coated 0.250 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 2. TRICLOSAN 1.4 g of gum containing 0.010 mg of Triclosan Gum base 0.850 Sorbitol 0.410 g Triclosan 0.00001 g Aspartame 0.09999 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 3. CETYL PYRIDINIUM - 1.5 g of gum containing 1 mg of cetyl pyridinium Gum base 0.950 g Sorbitol 0.500 g Cetyl pyridinium 0.001 g Aspartame 0.010 g Flavourings 0.014 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 4. DIMENHYDRINATE - 1.5 g of gum containing 25 mg of dimenhydrinate Gum base 0.950 g Sorbitol 0.475 g Dimenhydrinate, 50% microspheres 0.036 g Dimenhydrinate, normal 0.007 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 5. CAMOMILE - 1.5 g of gum containing 250 mg of extract of camomile. Gum base 0.800 g Sorbitol 0.415 g Camomile extract 0.250 g Aspartame 0.010 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 6. ASPIRIN - 1.5 g of gum containing 300 mg of aspirin Gum base 0.750 g Sorbitol 0.400 g Aspirin 0.300 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g 7. B-CAROTENE + VITAMIN E - 1.5 g of gum containing 25 mg of vitamin E and 50 mg of B-carotene Gum base 0.850 g Sorbitol 0.500 g Vitamin E, 50% coated 0.050 g .beta.-carotene 0.050 g Aspartame 0.010 g Flavourings 0.015 g Magnesium stearate 0.015 g Hydroxypropylmethyl cellulose 0.008 g Colourings 0.002 g Distilled water 0.090 g

## CLAIMS:

1. Chewing gum tablet comprising:a mixture of a chewing gum base and sugary microgranules;2. Chewing gum tablet according to claim 1, wherein said additive agent is a flavoring agent.3. Chewing gum tablet according to claim 1, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.4. Chewing gum tablet according to claim 1, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.5. Chewing gum tablet according to claim 1, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and polyethylene glycol 400.6. Chewing gum tablet according to claim 1, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.7. Chewing gum tablet according to claim 2, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood levels.a) freezing chewing gum in pellet form to a temperature of between -20.degree. C. and -25.degree. C. to form frozen gum;

- b) grinding said frozen gum to a particle size of between 60 and 190 mesh to form ground chewing gum;
- c) adding to said ground chewing gum sugary microgranules having adsorbed onto a surface thereof a component selected from the group consisting of an additive agent and an active ingredient to form a granular mixture;
- 9. A method according to claim 8, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.
- 11. A method according to claim 10, wherein said active ingredient is added to the mixture of ground chewing gum, sweetener, lubricant and flavoring agent in the form of microencapsulated or otherwise delayed release coated particles.
- 17. A method according to claim 8, wherein the mixture of said frozen chewing gum pellets and said sugary microgranules is granulated in moistened condition and dried on a fluid bed and then tablets are prepared by compression therefrom.
- 24. A chewing gum composition comprising:
  - a mixture of a chewing gum base and sugary microgranules;
- 25. Chewing gum composition according to claim 24, wherein said additive agent is a flavoring agent.
- 26. Chewing gum composition according to claim 24, wherein said at least one active ingredient is in form of microencapsulated or otherwise delayed release coated particles.
- 27. Chewing gum composition according to claim 24, wherein the cellulose is selected are selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose, methyl cellulose, ethyl cellulose, cellulose acetophthalate, carboxymethyl cellulose, hydroxyethyl cellulose, methylhydroxyethyl cellulose and methylhydroxypropyl cellulose phthalate.
- 28. Chewing gum composition according to claim 24, wherein the polyethylene glycol is selected from the group consisting of polyethylene glycol 6000 and polyethylene glycol 400.
- 29. Chewing gum composition according to claim 24, wherein the lacquer is supplemented with an additional component selected from the group consisting of colorings and dyes.
- 30. Chewing gum tablet according to claim 26, wherein some said particles of said active ingredient are microencapsulated and some are in free form in a predetermined ratio with regard to the patterns of initial delivery and of maintenance of the blood levels.
- 31. A method of preparing a chewing gum composition, comprising the steps of:
  - c) mixing said coated microgranules with frozen ground chewing gum to form a chewing gum composition.
- 32. A method according to claim 31, wherein said chewing gum is frozen in pellet form to a temperature of between -20.degree. C. and -25.degree. C. and ground to a particle size of between 60 and 190 mesh.
- 33. A method according to claim 31, wherein said ground chewing gum is mixed with at least one natural or synthetic sweetener in a ratio of 0.3-0.8 parts of gum per 0.6-0.2 parts of sweetener phase.
- 43. A method according to claim 31 and further including the step of compressing the chewing gum composition to form a tablet.

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L10: Entry 13 of 22

File: USPT

Jan 27, 1998

US-PAT-NO: 5711961

DOCUMENT-IDENTIFIER: US 5711961 A

TITLE: Pharmaceutical compositions based on chewing gum and a method for the preparation thereof

DATE-ISSUED: January 27, 1998

## INVENTOR-INFORMATION:

| NAME               | CITY  | STATE | ZIP CODE | COUNTRY |
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| Seneci; Alessandro | Milan |       |          | IT      |

## ASSIGNEE-INFORMATION:

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|----------------------------------|--------|-------|----------|---------|-----------|
| APR Applied Pharma Research S.A. | Stabio |       |          | CH      | 03        |

APPL-NO: 08/ 619459 [PALM]

DATE FILED: May 29, 1996

## FOREIGN-APPL-PRIORITY-DATA:

| COUNTRY | APPL-NO   | APPL-DATE     |
|---------|-----------|---------------|
| IT      | MI94A1586 | July 26, 1994 |

## PCT-DATA:

| APPL-NO        | DATE-FILED    | PUB-NO     | PUB-DATE    | 371-DATE     | 102(E)-DATE  |
|----------------|---------------|------------|-------------|--------------|--------------|
| PCT/EP95/02816 | July 15, 1995 | WO96/03111 | Feb 8, 1996 | May 29, 1996 | May 29, 1996 |

INT-CL: [06] A61 K 9/68

US-CL-ISSUED: 424/441, 424/440, 426/5, 426/3

US-CL-CURRENT: 424/441; 424/440, 426/3, 426/5

FIELD-OF-SEARCH: 424/440, 424/441, 426/5, 426/3

## PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

| PAT-NO                                                  | ISSUE-DATE    | PATENTEE-NAME    | US-CL   |
|---------------------------------------------------------|---------------|------------------|---------|
| <input type="checkbox"/> <a href="#"><u>3826847</u></a> | July 1974     | Ogawa            | 426/3   |
| <input type="checkbox"/> <a href="#"><u>4238510</u></a> | December 1980 | Cherukuri et al. | 426/5   |
| <input type="checkbox"/> <a href="#"><u>4452821</u></a> | June 1984     | Gergely          | 426/5   |
| <input type="checkbox"/> <a href="#"><u>4792453</u></a> | December 1988 | Reed             | 426/5   |
| <input type="checkbox"/> <a href="#"><u>4929447</u></a> | May 1990      | Yang             | 424/440 |
| <input type="checkbox"/> <a href="#"><u>5458890</u></a> | October 1995  | Williford        | 426/3   |

## FOREIGN PATENT DOCUMENTS

| FOREIGN-PAT-NO | PUBN-DATE | COUNTRY | US-CL |
|----------------|-----------|---------|-------|
| 0 551 700 A1   | July 1993 | EP      |       |

ART-UNIT: 152

PRIMARY-EXAMINER: Page; Thurman K.

ASSISTANT-EXAMINER: Faulkner; D.

## ABSTRACT:

Chewing gum tablets and their methods of preparation are disclosed. The gum tablets contain a mixture of chewing gum base and sugary microgranules with an additive agent and an active ingredient adsorbed onto their surface. A lacquer coating on the tablet contains cellulose and polyethylene glycols. The sugary microgranules are delayed release coated particles. The chewing gums act as vehicles for active ingredients. These active ingredients may be used alone or in combination in normal physical form in the form of coated microspheres.

43 Claims, 0 Drawing figures

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L10: Entry 17 of 22

File: USPT

US-PAT-NO: 5487902

DOCUMENT-IDENTIFIER: US 5487902 A

TITLE: Chewing gum composition with accelerated, controlled release of active agents

DATE-ISSUED: January 30, 1996

## INVENTOR-INFORMATION:

| NAME              | CITY    | STATE | ZIP CODE | COUNTRY |
|-------------------|---------|-------|----------|---------|
| Andersen; Carsten | Vejle   |       |          | DK      |
| Pedersen; Morten  | Radovre |       |          | DK      |

US-CL-CURRENT: 426/3; 426/4, 426/654

## CLAIMS:

We claim:

1. Chewing gum composition with accelerated, controlled release of substantially fat-soluble active agents, produced by combining

i) a chewing gum base having a resin component, wherein said resin component of the chewing gum base comprises at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin, and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, with

ii) one or more substantially fat-soluble active agents, additives, and at least one solubilizer in a quantity of 1-10 weight %, said solubilizer having an HLB value of 14-20.

2. Chewing gum composition as claimed in claim 1 wherein the resin component of the chewing gum base contains at least 40% of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin,

pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000.

3. Composition as claimed in claim 1 wherein the resin component of the chewing gum base contains a terpene resin of natural or synthetic origin.

4. Composition as claimed in claim 1 wherein the solubilizer of the composition is selected from the group consisting of lecithin, polyoxyethylene sorbitan fatty acid esters, fatty acid salts, mono and diacetyl tartaric acid esters of mono and diglycerides of edible fatty acids, citric acid esters of mono and diglycerides of edible fatty acids, saccharose esters of fatty acids, polyglycerol esters of fatty acids, polyglycerolesters of internal esterified castor oil acid, sodium stearoyllactylate, sodium lauryl sulfate, sorbitan esters of fatty acids, polyoxyethylated hydrogenated castor oil, blockcopolymers of ethylene oxide and propylene oxide, polyoxyethylene fatty alcohol ether, sorbitan ester of fatty acid and polyoxyethylene steraric acid ester.

5. Chewing gum composition as claimed in claim 4 wherein the solubilizer is selected from the group consisting of polyoxyethylene stearate, polyoxyethylene sorbitan fatty acid ester, mono and diacetyl tartaric acid esters of mono and diglycerides of edible fatty acids, citric acid ester of mono and diglycerides of edible fatty acids, sodium stearoyllactylate, sodium laurylsulfate, polyoxyethylated hydrogenated castor oil, blockcopolymers of ethylene oxide and propylene oxide and polyoxyethylene fatty alcohol ether.

6. Chewing gum composition as claimed in claim 1 wherein 3-6 weight % solubilizer is added to the chewing gum composition.

7. Chewing gum composition as claimed in claim 1 wherein the composition further contains up to 60 weight % of at least one carrier, which carrier forms a solid dispersion together with the active agent.

8. Composition as claimed in claim 7 wherein the carrier

is selected from the group consisting of polyethylene glycol and polyvinyl pyrrolidone.

9. Composition as claimed in claim 8 wherein the carrier is polyethyleneglycol 1000-20,000.

10. Composition as claimed in claim 1 wherein the active agent has a water-solubility of less than 10 g/100 ml.

11. Chewing gum composition as claimed in claim 10 wherein the active agent is selected from the group consisting of dietary supplement, oral and dental compositions, antiseptics, pH adjusting agents, anti-smoking agents, sweeteners, flavorings, aroma agents and medicines.

12. Chewing gum composition as claimed in claim 11 wherein the active agent is selected from the group consisting of paracetamol, benzocaine, cinnarizine, menthol, carvone, caffeine, chlorhexidine-diacetate, cyclizine hydrochloride, 1,8-cineol, nandrolone, miconazole, nystatin, aspartame, sodium fluoride, nicotine, saccharin, cetylpyridinium chloride, other quaternary ammonium-compounds, vitamin E, vitamin A, vitamin D, glibenclamide or derivatives thereof, progesterone, acetylsalicylic acid, dimenhydrinate, cyclizine, metronidazole, sodium hydrogencarbonate, the active components from ginkgo, the active components from propolis, the active components from ginseng, methadone, oil of peppermint, salicylamide, hydrocortisone and astemizole.

13. Process for the preparation of a chewing gum composition as claimed in claim 1 comprising the steps of preparing a chewing gum base on the basis of conventional chewing gum base ingredients including a resin portion, wherein the resin portion comprises at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, and then preparing a chewing gum composition while adding at

least one substantially fat-soluble active agent and 1-10 weight % of at least one solubilizer, said solubilizer having an HLB value of 14-20.

14. Process as claimed in claim 13 comprising the further step of mixing the active agent intimately with the solubilizer to form a mixture and then admixing the mixture to the chewing gum composition.

15. Process as claimed in claim 14 comprising the further step of forming a solid dispersion of the active agent in a carrier prior to mixing the active agent with the solubilizer.

16. Process for making a chewing gum composition, comprising the step of combining a solubilizer for accelerated, controlled release of substantially fat-soluble active agents with a composition comprising a chewing gum base having a resin component comprising at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, said solubilizer being present in a quantity of 1-10 weight % of said chewing gum composition and having an HLB value of 14-20.

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L10: Entry 17 of 22

File: USPT

DOCUMENT-IDENTIFIER: US 5487902 A

TITLE: Chewing gum composition with accelerated, controlled release of active agents

**Brief Summary Text (61):**

The invention has proved advantageous for controlled, accelerated release of active agents selected among the group dietary supplements, oral and dental compositions, antiseptic agents, pH adjusting agents, anti-smoking agents, sweeteners, flavourings, aroma agents or drugs, such as for instance paracetamol, benzocaine, cinnarizine, menthol, carvone, caffeine, chlorhexidine-di-acetate, cyclizine hydrochloride, 1,8-cineol, nandrolone, miconazole, mystatine, aspartame, sodium fluoride, nicotine, saccharin, cetylpyridinium chloride, other quaternary ammonium compounds, vitamin E, vitamin A, vitamin D, glibenclamide or derivatives thereof, progesterone, acetylsalicylic acid, dimenhydrinate, cyclizine, metronidazole, sodium hydrogencarbonate, the active components from ginkgo, the active components from propolis, the active components from ginseng, methadone, oil of peppermint, salicylamide, hydrocortisone or astemizole.

**Brief Summary Text (66):**

Examples of active agents in the form of antiseptics are for instance salts and compounds of guanidine and biguanidine (for instance chlorhexidine diacetate) and the following types of substances with limited water-solubility: quaternary ammonium compounds (for instance ceramine, chloroxylenol, crystal violet, chloramine), aldehydes (for instance paraformaldehyde), compounds of dequaline, polynoxiline, phenols (for instance thymol, para chlorophenol, cresol) hexachlorophene, salicylic anilide compounds, triclosan, halogenes (iodine, iodophores, chloroamine, dichlorocyanuric acid salts), alcohols (3,4 dichlorobenzyl alcohol, benzyl alcohol, phenoxyethanol, phenylethanol), cf. furthermore Martindale, The Extra Pharmacopoeia, 28th edition, page 547-578; metal salts, complexes and compounds with limited water-solubility, such as aluminium salts, (for instance aluminium potassium sulfate AlK(SO<sub>4</sub>)<sub>2</sub>.12 H<sub>2</sub>O) and furthermore salts, complexes and compounds of boron, barium, strontium, iron, calcium, zinc, (zinc acetate, zinc chloride, zinc gluconate), copper (copper chloride, copper sulfate), lead, silver, magnesium, sodium, potassium, lithium, molybdenum, vanadium should be included; other compositions for the care of mouth and teeth: for instance; salts, complexes and compounds containing fluorine (such as sodium fluoride, sodiummonofluorophosphate, aminofluorides, stannous fluoride), phosphates, carbonates and selenium.

**CLAIMS:**

1. Chewing gum composition with accelerated, controlled release of substantially fat-soluble active agents, produced by combining

i) a chewing gum base having a resin component, wherein said resin component of the chewing gum base comprises at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin, and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, with

2. Chewing gum composition as claimed in claim 1 wherein the resin component of the chewing gum base contains at least 40% of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000.

3. Composition as claimed in claim 1 wherein the resin component of the chewing gum base contains a terpene resin of natural or synthetic origin.

5. Chewing gum composition as claimed in claim 4 wherein the solubilizer is selected from the group consisting of

polyoxyethylene stearate, polyoxyethylene sorbitan fatty acid ester, mono and diacetyl tartaric acid esters of mono and diglycerides of edible fatty acids, citric acid ester of mono and diglycerides of edible fatty acids, sodium stearoyllactylate, sodium laurylsulfate, polyoxyethylated hydrogenated castor oil, blockcopolymers of ethylene oxide and propylene oxide and polyoxyethylene fatty alcohol ether.

6. Chewing gum composition as claimed in claim 1 wherein 3-6 weight % solubilizer is added to the chewing gum composition.
7. Chewing gum composition as claimed in claim 1 wherein the composition further contains up to 60 weight % of at least one carrier, which carrier forms a solid dispersion together with the active agent.
11. Chewing gum composition as claimed in claim 10 wherein the active agent is selected from the group consisting of dietary supplement, oral and dental compositions, antiseptics, pH adjusting agents, anti-smoking agents, sweeteners, flavorings, aroma agents and medicines.
12. Chewing gum composition as claimed in claim 11 wherein the active agent is selected from the group consisting of paracetamol, benzocaine, cinnarizine, menthol, carvone, caffeine, chlorhexidine-diacetate, cyclizine hydrochloride, 1,8-cineol, nandrolone, miconazole, nystatin, aspartame, sodium fluoride, nicotine, saccharin, cetylpyridinium chloride, other quaternary ammonium-compounds, vitamin E, vitamin A, vitamin D, glibenclamide or derivatives thereof, progesterone, acetylsalicylic acid, dimenhydrinate, cyclizine, metronidazole, sodium hydrogencarbonate, the active components from ginkgo, the active components from propolis, the active components from ginseng, methadone, oil of peppermint, salicylamide, hydrocortisone and astemizole.
13. Process for the preparation of a chewing gum composition as claimed in claim 1 comprising the steps of preparing a chewing gum base on the basis of conventional chewing gum base ingredients including a resin portion, wherein the resin portion comprises at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, and then preparing a chewing gum composition while adding at least one substantially fat-soluble active agent and 1-10 weight % of at least one solubilizer, said solubilizer having an HLB value of 14-20.
14. Process as claimed in claim 13 comprising the further step of mixing the active agent intimately with the solubilizer to form a mixture and then admixing the mixture to the chewing gum composition.
16. Process for making a chewing gum composition, comprising the step of combining a solubilizer for accelerated, controlled release of substantially fat-soluble active agents with a composition comprising a chewing gum base having a resin component comprising at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, said solubilizer being present in a quantity of 1-10 weight % of said chewing gum composition and having an HLB value of 14-20.

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L5: Entry 1 of 3

File: USPT

DOCUMENT-IDENTIFIER: US 5888491 A

TITLE: Optionally crosslinkable coatings, compositions and methods of use

Detailed Description Text (100):

Compositions for delivery of the polymer or surfactant may additionally contain other adjuvants, such as flavorants (both natural and synthetic, such as peppermint oil, menthol and sweeteners), coloring agents, viscosity modifiers, preservatives, antioxidants and antimicrobial agents (such as hydroquinone, BHT, ascorbic acid, p-hydroxybenzoic acid, alkyl esters, sodium sorbate and thymol), other anti-plaque additives (such as organophosphonates, triclosan and others such as those disclosed in U.S. Pat. No. 3,488,419), oral therapeutic agents (such as fluoride salts, chlorhexidine and allantoin), pigments and dyes and buffers to control ionic strength.

## CLAIMS:

1. A dental composition suitable for coating human oral surfaces, said composition comprising a polymer comprising repeating units
2. A chewing gum comprising a polymer comprising repeating units
3. A method for coating oral surfaces of the mouth of a human comprising
4. A dental composition suitable for coating oral surfaces in the human mouth, said composition comprising
6. A dental composition suitable for coating oral surfaces in the human mouth, said composition comprising
7. A dental composition suitable for coating human oral surfaces, said composition comprising a polymer comprising repeating units
10. A dental composition suitable for coating human oral surfaces, said composition comprising a polymer comprising repeating units
28. A coating on hard tissue surfaces or surfaces of the oral environment, which coating is made from a polymer comprising repeating units
29. A temporary or permanent dental restorative, said restorative having a coating comprising a polymer comprising repeating units
30. An orthodontic device having a coating comprising a polymer comprising repeating units